Local Plan Technical Report

2018/2019 Infrastructure Delivery Plan Appendices

Part 2: Transport – East St Albans

Appendices 9 to 12

St Albans City & District Council

Appendix 9: Transport Extract of East St Albans Landowner/Developer Engagement Stage 2 Presentations and follow up report (PPC November 2015)

OAKLANDS COLLEGE
STRATEGIC LOCAL PLAN

Discussion with landowners on possible development sites in the Metropolitan Green Belt. Stage 2 - Submissions' Meeting

OAKLANDS COLLEGE

St Albans City & District Council

VRG planning

AECOM

Lambert Smith Hampton

DLA ARCHITECTURE

15-10-2015 - [2015-195]

The Masterplan must work on many levels; It must be functional and provide efficient access for vehicles and people across the site. It must enable and encourage interaction between people to help create a sense of community and avoid isolation.

It must provide people not only with a home in which to live, but a place which they can enjoy throughout the year. It must provide a range of outside spaces, shared by the community, for all people to appreciate.

It must be rich in character, distinctive and memorable.

STRUCTURE, LAYERS & TEXTURES 01

1. Site Character and Densities
Oaklands Village: a solution unique to St Albans to create a sense of place and appealing to a wide demographic.

2. Public Open Space and Recreation
Accessible and inviting open spaces across the site alongside sport and recreation facilitate community cohesion.

3. Framework of Garden Spaces
Invigorating open public green spaces with shared allotments, alongside private gardens and woodland areas.

4. Pedestrian, Cycle and Jogging Routes
Clear and legible routes which promote cycling and walking providing easy access to all areas.

5. Education
Proximity and connectivity to a modern, progressive learning environmentsl – opportunities for live-work.

6. Highways
Improved connections between existing infrastructure as well as complementary integrated, sustainable travel provision.

PROPOSED MASTERPLAN 01

Large areas of residential amenity space with wide habitat corridors

A Combined Heat and Power facility at the centre of the scheme

Sustainable drainage integrated into the masterplan through swales and reed beds

A new two form entry Primary school able to link with other schools in the area but also with the college

Comprehensive new road junction improvements

A mix of high quality designed homes

40% affordable housing in line with the requirements of the local community

Invigorating open public green spaces with shared allotments, alongside private gardens and woodland areas

Self-build Code Level 6 experimental homes which would also be used as a teaching tool for the College

College Square – as part of the current masterplan.

The College at the heart of the community and community education

Improved public access to college sports facilities

St Albans City & District Council

OAKLANDS COLLEGE

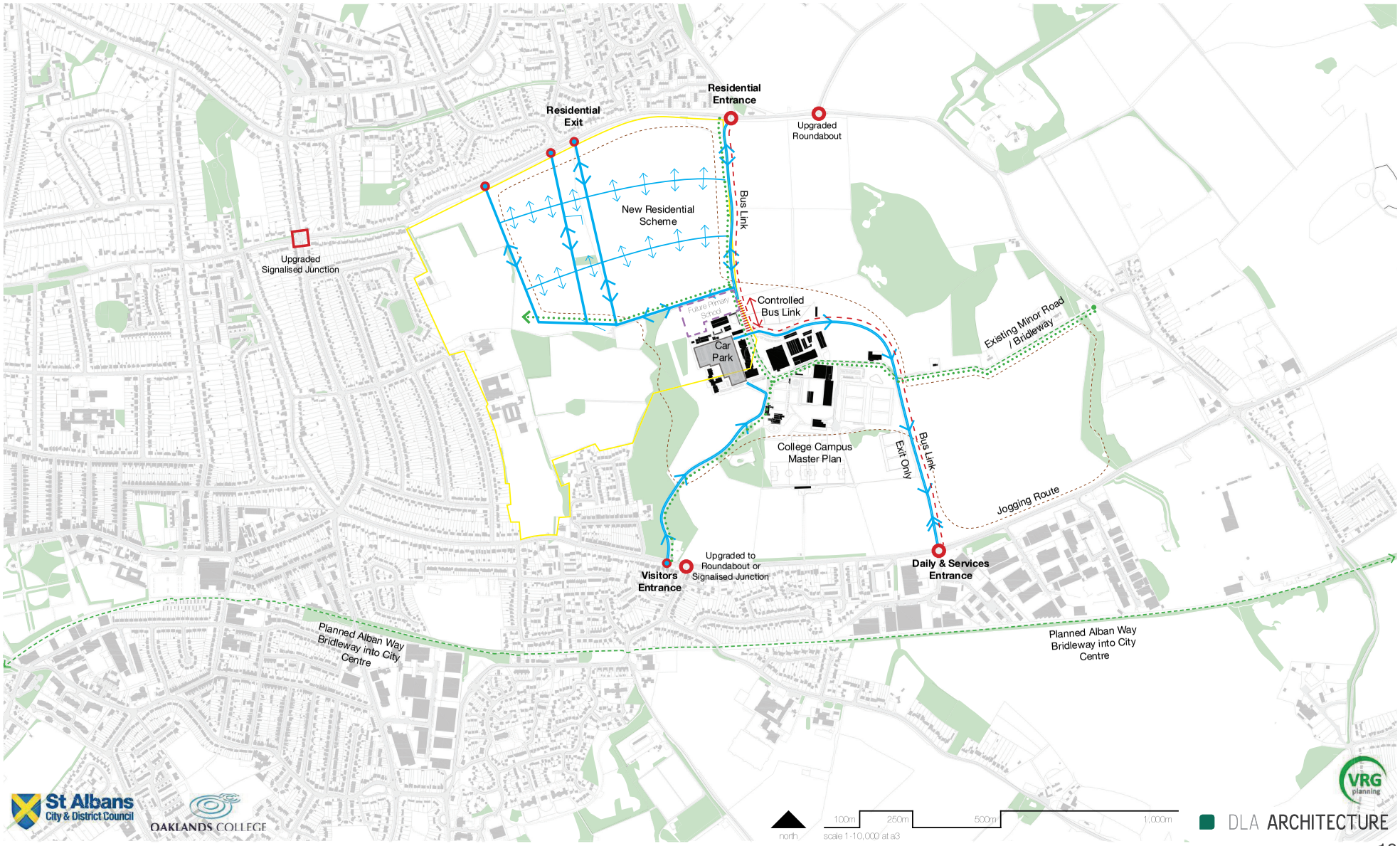
VRG planning

DLA ARCHITECTURE

TRANSPORT NETWORK & SERVICE IMPROVEMENTS 06

KEY TO DIAGRAM:

- Potential Green Belt Release Land
- New Main Road
- New Primary Access Road
- New Secondary Access Road
- Existing Minor Road / Bridleway
- New Footpath
- New Jogging Route
- Bus Link
- New Controlled Road / Bus Link to
- New & Upgraded Connection
- New & Upgraded Roundabout
- New & Upgraded Signalised Junction

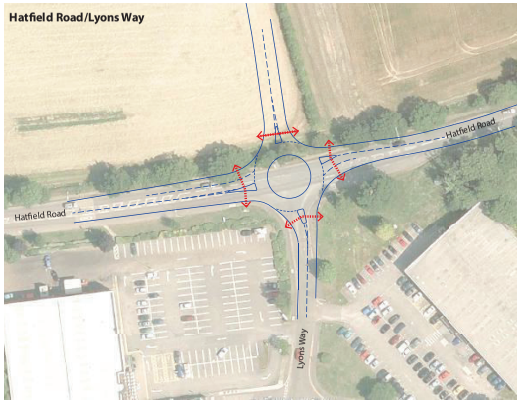


St Albans City & District Council

OAKLANDS COLLEGE

VRG planning

DLA ARCHITECTURE

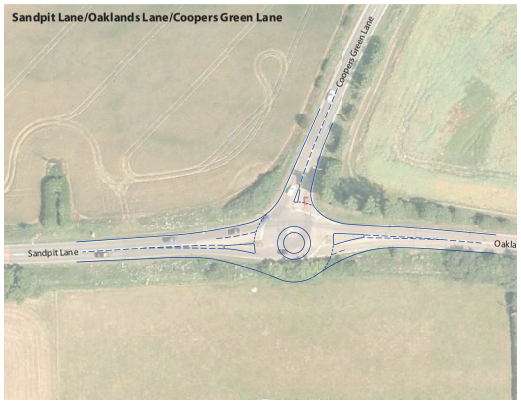


Hatfield Road / Lyons Way

We have prepared an option showing the existing priority T-junction arrangement replaced by a 4-arm roundabout, with the northern arm serving as the new access to the College from Hatfield Road. Again, this layout is consistent with the scheme agreed for the Hub scheme, so has previously been seen and approved by Hertfordshire.

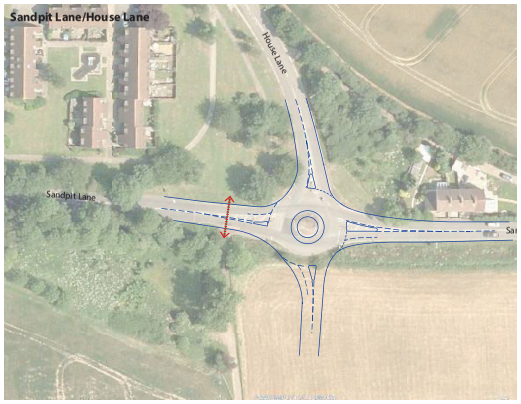
Hatfield Road / Colney Heath Lane

We have prepared two options for this junction. The first option shows the existing priority T-junction arrangement replaced by a 3 arm roundabout. This layout is consistent with the scheme agreed for the Hub scheme, so has previously been seen and approved by Hertfordshire. The second option shows the existing priority T-junction converted to a signalised junction. We did look at this as part of the Phase 2 application but couldn't get it to work due to the interaction with South Way. However, in both options we have assumed that South Way becomes entry only, therefore the signalised option may be worthy of further investigation as it requires significantly less land and allows pedestrian crossing facilities to be integrated into the junction.



Sandpit Lane / Coopers Green Lane

We have shown an enlarged 3-arm roundabout, which would provide additional capacity and also improve the safety of the junction by increasing deflection which would slow approach speeds.



Sandpit Lane / House Lane

We have prepared an option showing the existing 3-arm roundabout replaced by a larger 4-arm roundabout, with the new southern arm serving as an access to the residential development

Sandpit Lane / Marshalswick Lane

Improvements are proposed at this junction as part of the Phase 2 application – these are shown in grey in the sketch. The only option we can see for further improvement to this junction is to widen the eastern approach by taking land from the verges to the north and south. This would address the existing pinch point, although is unlikely to substantially improve capacity over and above the Phase 2 scheme. Consideration could be given to introducing advanced cycle stop lines at this junction to encourage cycling, however, Hertfordshire have previously indicated that traffic capacity is the overriding concern at this junction.

Oaklands College - Indicative Viability Assessment

REVENUE

	sqm	Gross Sales (m)
House/ Flat Sales	c. 81,000	£ 397.6
TOTAL REVENUE		£ 397.6

COSTS

	Costs (m)
Residential Construction	£ 119.9
Ground Works	£ 6.0
Transport - roads, sustrans, Stat/ LA	£ 15.1
Landscaping - hard/ soft	£ 8.5
Primary School - 2FE	£ 7.5
CHP	£ 2.0
Developers Profit	£ 70.1
Fees - Professional, Disposal, Finance	£ 48.9
TOTAL COSTS	£ 278.0

RESIDUAL LAND VALUE	£ 119.6
less costs	£ 6.5
NET RESIDUAL LAND VALUE	£ 113.1

Viability Assessment Assumptions:

a. Based on very limited information other than considering scheme outputs.
b. No benefit of any site investigations, surveys or schematics.
c. The scheme will have the feel of high quality suburban schemes such as the award winning Accordia development in Cambridge.
d. Having regard to the above the advice provided must be considered as indicative only.

APPRAISAL APPROACH & VIABILITY ASSESSMENT 11

Development Approach

The College will be seeking developer partners for the Masterplan along with existing partner TW. To meet the Council's need to ensure that the shared vision for high quality designed sustainable homes is realised the College intends to:

- Seek developers through a procurement competition to attract the best partners;
- Run a procurement programme that enshrines the requirements into a contract that commits the developer to the scheme with a retainer mechanism;
- Manage the development closely to monitor the progress against the vision.

The College also feels that the Council will have the opportunity to encourage the vision by adopting planning which describes the vision for high quality designed homes.

Lambert Smith Hampton states that with the indicative residual land value that is shown there is no impediment to delivery. Also on the basis of the indicative Viability Assessment we can be absolutely confident about deliverability on the Oaklands College site.

The site has been subject to a great deal of site specific technical work, done in the context of the recent planning application. This assists greatly in terms of the deliverability and understanding of the proposals.

OAKLANDS COLLEGE
STRATEGIC LOCAL PLAN

Discussion with landowners on possible development sites in the Metropolitan Green Belt. Stage 2 - Submissions' Meeting

OAKLANDS COLLEGE

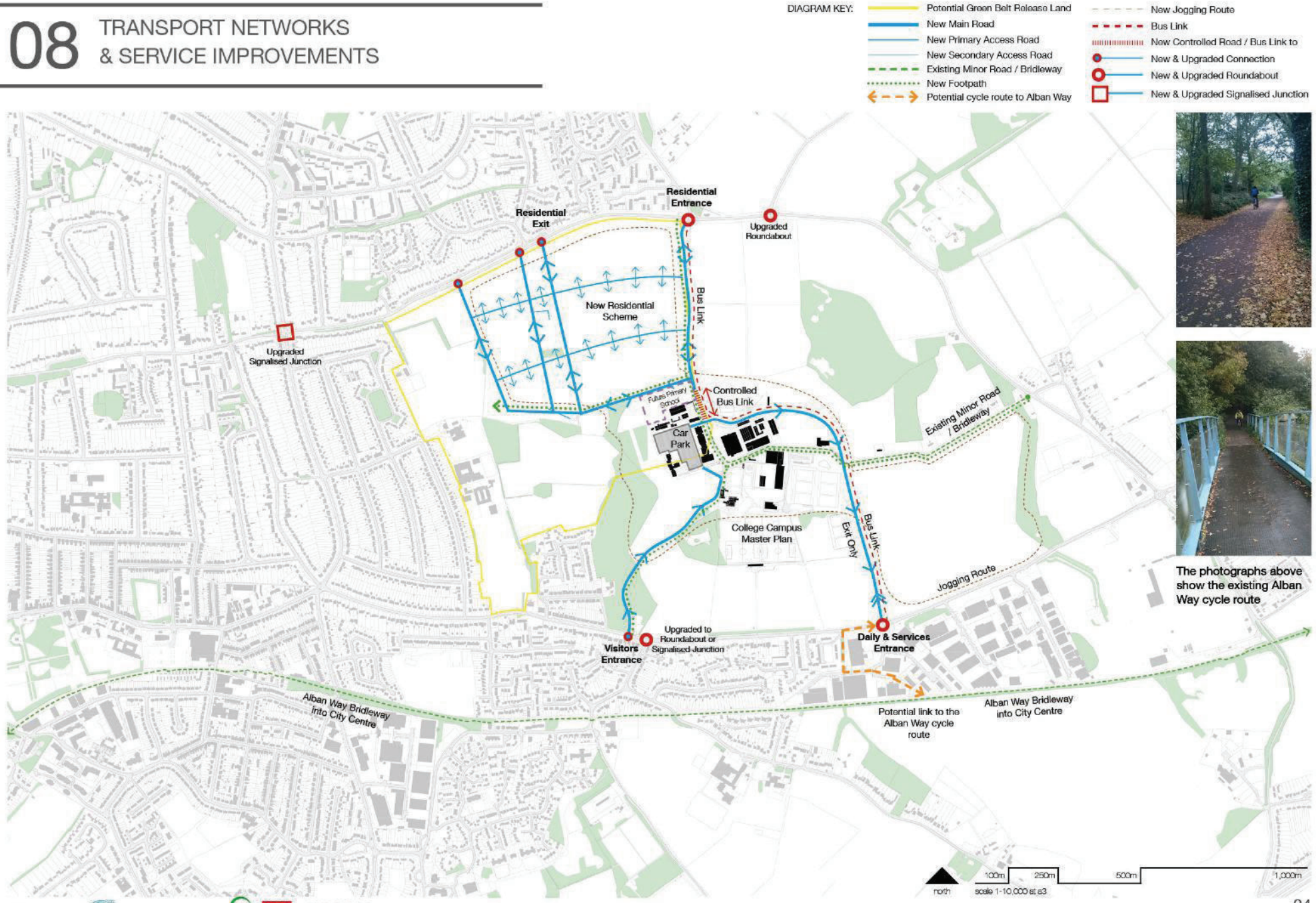
St Albans City & District Council

15-10-2015 - [2015-195]

VRG planning AECOM Lambert Smith Hampton

DLA ARCHITECTURE

08 TRANSPORT NETWORKS & SERVICE IMPROVEMENTS



The photographs above show the existing Alban Way cycle route

St Albans City & District Council · Oaklands College · DLA Architecture · VRG · Lambert Smith Hampton · AECOM

08 TRANSPORT NETWORKS & SERVICE IMPROVEMENTS

THE BENEFITS OF THE PROPOSED TRANSPORT AND SERVICE IMPROVEMENTS INCLUDE:

- REDUCED TRAFFIC PROBLEMS AT THE JUNCTION OF SOUTH DRIVE / HATFIELD ROAD / COLNEY HEATH LANE
- A FREQUENT BUS SERVICE ACCESSING THE COLLEGE & RESIDENTIAL DEVELOPMENT
- BUS SERVICE DRECTLY SERVING THE COLLEGE, REMOVING THE NEED FOR STUDENTS TO WALK TO AND CONGREGATE ON HATIFLED ROAD AND AVOIDING DELAYS ASSOCIATED WITH BUSES PULLING IN / OUT
- LESS PRESSURE ON HATFIELD ROAD AS STAFF ACCOMMODATION WITHIN RESIDENTIAL DEVELOPMENT

THE EXISTING COLLEGE ENTRANCE:

HATFIELD ROAD / COLNEY HEATH LANE:

- OPTION 1:
- NEW 3 ARM ROUNDABOUT
- ACCESS ONLY THEREBY SOLVING EXIT ISSUES

- OPTION 2:
- NEW SIGNALISED JUNCTION
- ACCESS ONLY THEREBY SOLVING EXIT ISSUES

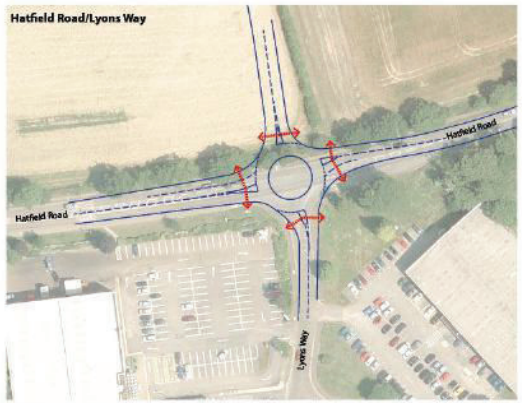
Hatfield Road / Colney Heath Lane

We have prepared two options for this junction. The first option shows the existing priority T-junction arrangement replaced by a 3 arm roundabout. This layout is consistent with the scheme agreed for the Hub scheme, so has previously been seen and approved by Hertfordshire. The second option shows the existing priority T-junction converted to a signalised junction. We did look at this as part of the Phase 2 application but couldn't get it to work due to the interaction with South Way. However, in both options we have assumed that South Way becomes entry only, therefore the signalised option may be worthy of further investigation as it requires significantly less land and allows pedestrian crossing facilities to be integrated into the junction.

NEW COLLEGE ENTRANCE / EXIT:

HATFIELD ROAD / LYONS WAY:

- NEW MAIN ENTRANCE / EXIT TO THE COLLEGE
- RELIEVING TRAFFIC PRESSURE
- PREVIOUSLY AGREED BY HIGHWAYS



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08 TRANSPORT NETWORKS & SERVICE IMPROVEMENTS

THE BENEFITS OF THE PROPOSED TRANSPORT AND SERVICE IMPROVEMENTS INCLUDE:

- INCREASED CAPACITY AT COOPERS GREEN AND SANDPIT LANE/MARSHALSWICK LANE
- SAFETY IMPROVEMENTS UNDERTAKEN

SANDPIT LANE / MARSHALSWICK LANE:

- WIDEN THE EASTERN APPROACH
- RELIEVING THE PINCH POINTS
- ADVANCED CYCLE STOPS

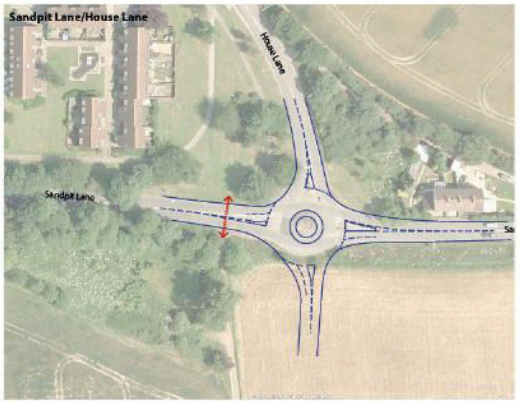
Sandpit Lane / Marshalswick Lane

Improvements are proposed at this junction as part of the Phase 2 application – these are shown in grey in the sketch. The only option we can see for further improvement to this junction is to widen the eastern approach by taking land from the verges to the north and south. The potential for two separate left hand turn lanes will be explored. Consideration could be given to introducing advanced cycle stop lines at this junction to encourage cycling.

NEW RESIDENTIAL ACCESS:

SANDPIT LANE / HOUSE LANE:

- NEW 4 ARM ROUNDABOUT
- RESIDENTIAL ENTRANCE / EXIT



Sandpit Lane / House Lane

We have prepared an option showing the existing 3-arm roundabout replaced by a larger 4-arm roundabout, with the new southern arm serving as an access to the residential development

SANDPIT LANE / COOPERS GREEN LANE:

- ENLARGED 3 ARM ROUNDABOUT
- ADDITIONAL CAPACITY
- IMPROVED SAFETY

Sandpit Lane / Coopers Green Lane

We have shown an enlarged 3-arm roundabout, which would provide additional capacity and also improve the safety of the junction by increasing deflection which would slow approach speeds.

Appendix 10: AECOM St Albans East Emerging Transport Strategy (January 2016)

AECOM

Strategic Local Plan: St Albans East (Oaklands)

Emerging Transport Strategy

Prepared on behalf of Oaklands College and Taylor Wimpey North Thames

January 2016

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Contents

“Our vision for the site is to create high quality new homes set within an integrated sustainable masterplan connecting directly into the College; putting the College even more firmly at the heart of the community with public access through footpaths and cycle paths to our parkland and our agricultural setting.”

Oaklands College Strategic Local Plan Submission

Oaklands College Masterplan

01

Oaklands College Masterplan

Draft Strategic Local Plan

St Albans' draft Strategic Local Plan for the period 2011-2031 includes the potential release of Green Belt land in East St Albans (Oaklands) for a residential development of at least 1,000 units.

Highway capacity and access to Hatfield Road and Sandpit Lane are identified as key constraints on future residential development in this location, with development proposals required to deliver:

- *Substantial Green Infrastructure provision, including… extensively improved and new countryside access, public footpaths, cycleways and bridleways;*
- *Transport network (including walking and cycling links) and public transport services upgrades/improvements; and*
- *Provision of improvements to the accesses to Hatfield Road and Sandpit Lane.*

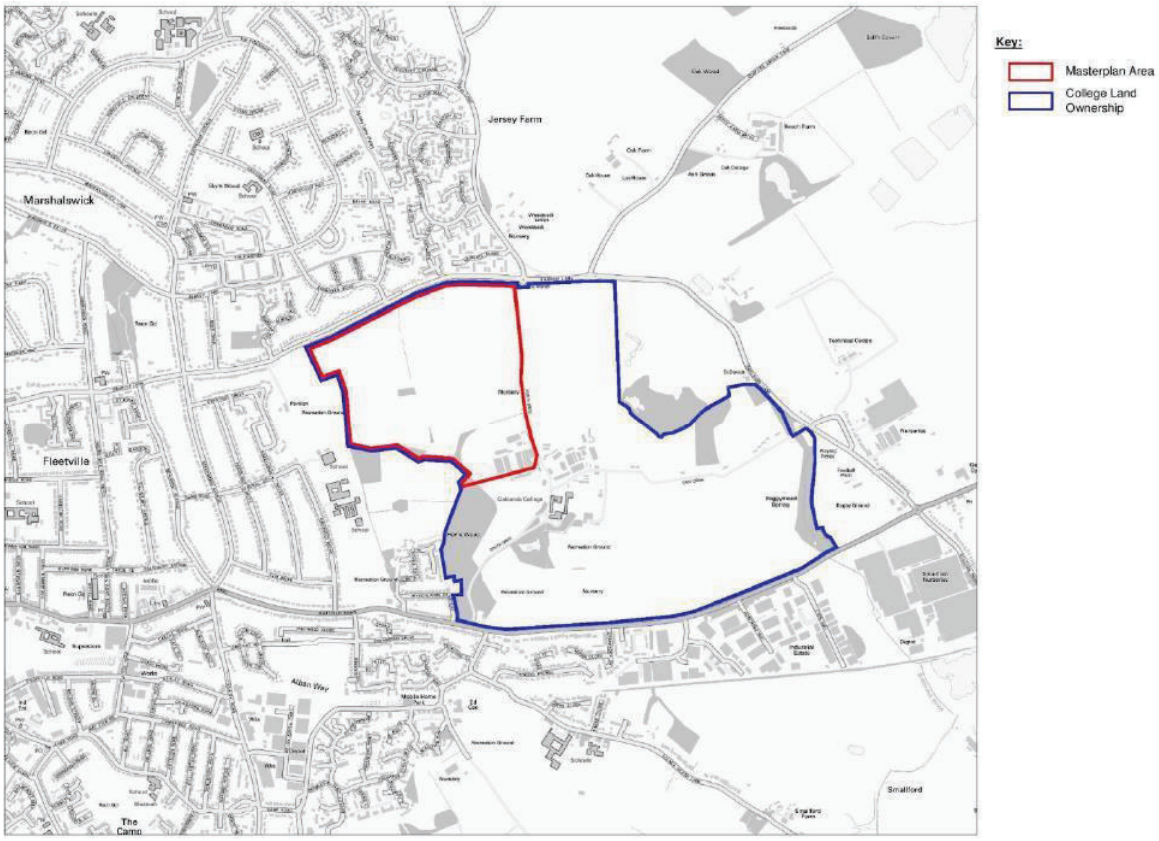
Oaklands College Masterplan

The College's vision is to create an exemplar high quality residential development of approximately 1,000 units on land to the north of the existing College development.

A planning application for an initial phase of approximately 350 residential units has already been submitted to St Albans City and District Council (Application reference 5/2013/2589). This is an enabling development, the receipts of which would fund improvements to the College facilities.

Figure 1 shows the extent of land currently owned by the College (outlined in blue) and indicative extents of the masterplan area (outlined in red).

Figure 1: Oaklands College Masterplan Area



Access Strategy: Overview

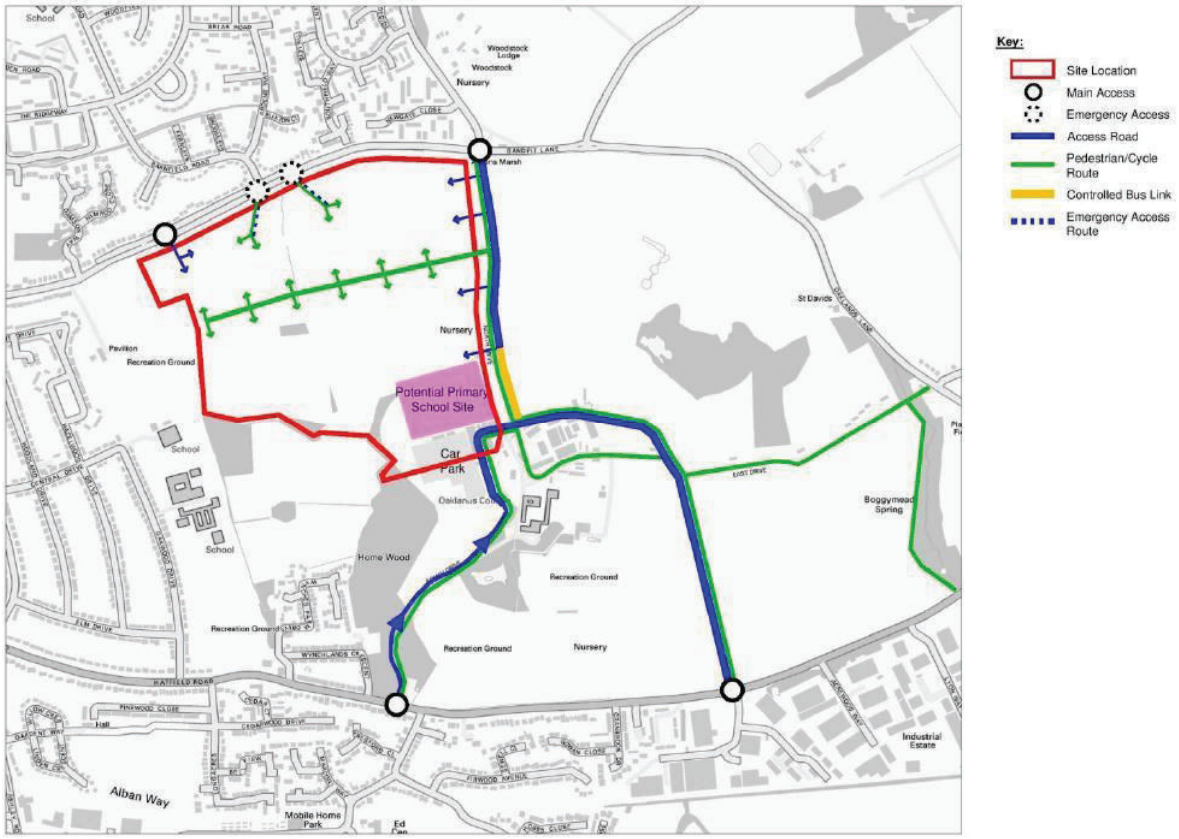
The College's vision for the St Albans Campus is to create a high quality sustainable residential development with public access to the College and surrounding areas via a network of footpaths and cycle paths that cross the site.

The emerging masterplan includes improved access to the College for all modes of transport from Hatfield Road with new pedestrian, cycle and vehicle accesses created on Sandpit Lane to serve the residential development.

A controlled road link would be provided between the College and residential developments offering opportunities for significantly improved bus access.

The emerging access strategy is shown in **Figure 2**.

Figure 2: Emerging Access Strategy

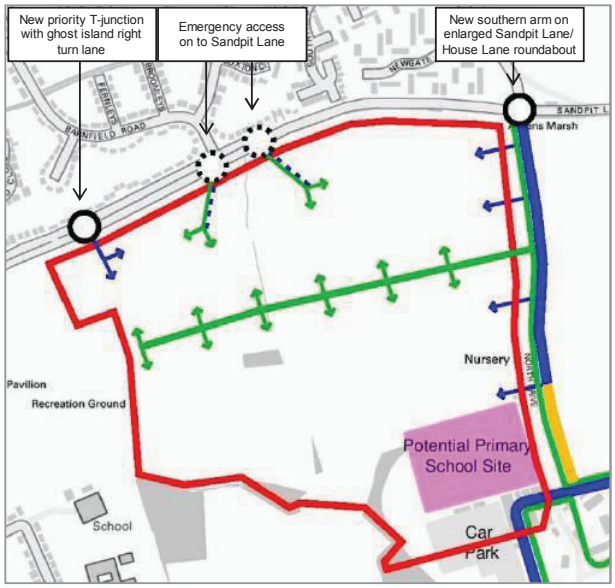


Access Strategy: Residential Development

It is envisaged that the residential development would be served by two main points of vehicular access on Sandpit Lane, with two further emergency access junctions, which would also serve as pedestrian and cycle accesses.

Figure 3 shows the emerging access strategy for the residential site.

Figure 3: Residential Site Access Strategy



The main access to the initial phase of the development would be located in the north western corner of the site on Sandpit Lane, approximately 200m east of the junction with Damson Way. The junction would be a priority T-junction with a ghost island right turn lane (**Figure 4**).

A separate emergency access would be provided onto Sandpit Lane, immediately to the east of the junction with Barnfield Road. This would also serve as pedestrian and cycle access, linking the development in to the network of routes in the predominantly residential areas further to the north.

Access to the later phases of the development would be located further east on Sandpit Lane. It is envisaged that the existing roundabout at the junction of Sandpit Lane and House lane could be enlarged with a new southern arm added to serve the expanded residential development (**Figure 5**).

Another emergency access point would be provided on Sandpit Lane, between the junctions with Barnfield Road and House Lane. This access would also provide pedestrians and cyclists with access to the development from the north.

Figure 4: Western Access Junction (Proposed Layout)

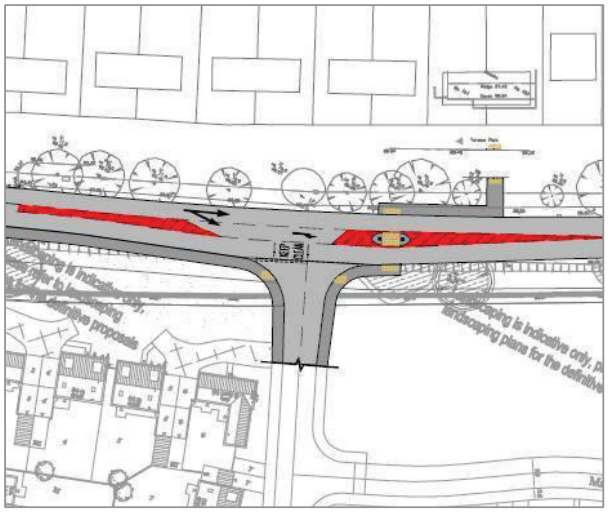
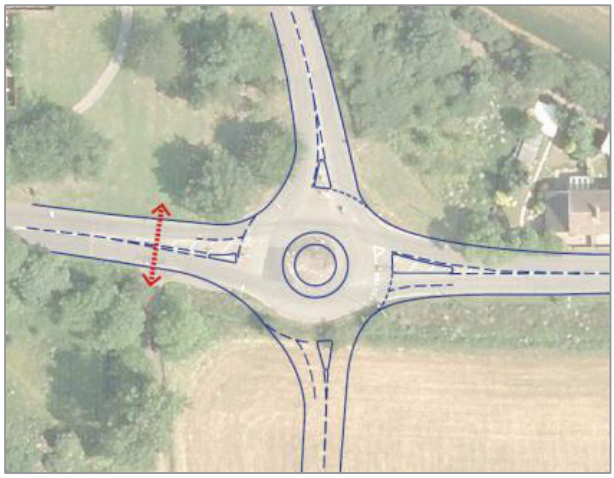


Figure 5: Eastern Access Junction (Indicative Layout)

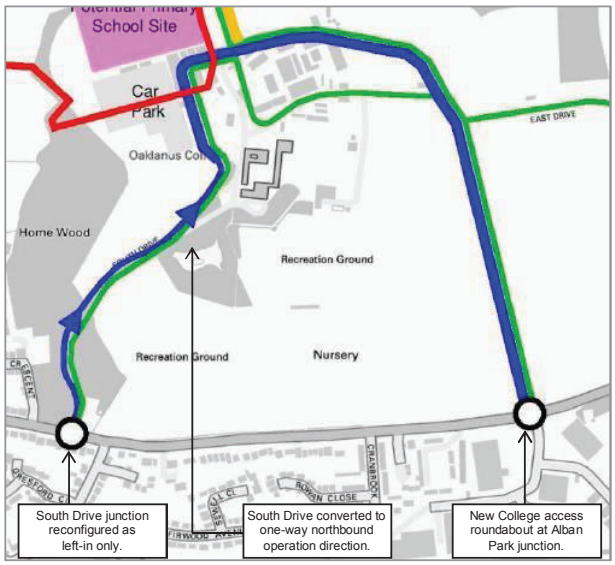


Access Strategy: College Development

The masterplan includes a new access to the site on Hatfield Road, which would become the main entrance to the College. Access to the College via South Drive would become one-way with improvements made to the facilities for pedestrians and cyclists.

Figure 6 shows the emerging access strategy for the College.

Figure 6: College Access Strategy



A new access to the College would be created on Hatfield Road at the junction with Alban Park. The existing priority T-junction would be replaced by a roundabout, with a new northern arm serving the College, as shown in **Figure 7**. This junction would become the main access into the College for staff and students, with only visitors, buses and taxis permitted to use the current access to the west.

As a result of the reduced use of the current access, it is proposed that the South Drive junction would be reconfigured so that traffic can only turn left in from Hatfield Road. This would enable South Drive to become one-way northbound, with the existing southbound lane used to provide a segregated cycle route into the College.

The removal of right turning traffic from this junction creates the potential for improvements to be made to the nearby Hatfield Road/Colney Heath Lane junction. Two potential options are being considered; the first would be to replace the existing junction with a roundabout (see **Figure 8**) while the second option involves signalising the junction (see **Figure 9**). Both options offer potential to provide improved pedestrian and cycle crossing facilities at this busy junction.

Figure 7: Hatfield Road/Alban Park Junction (Indicative Layout)

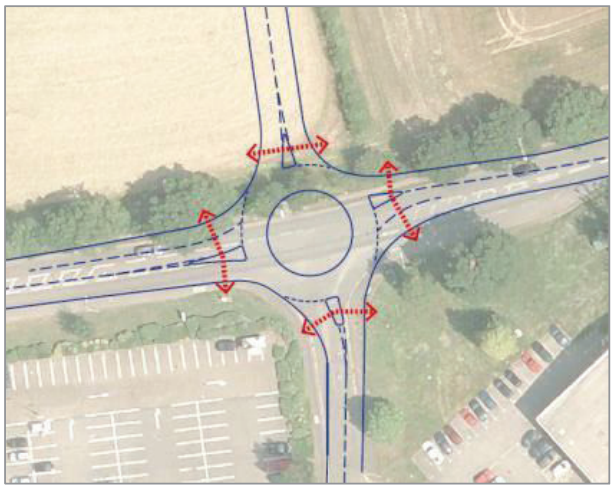
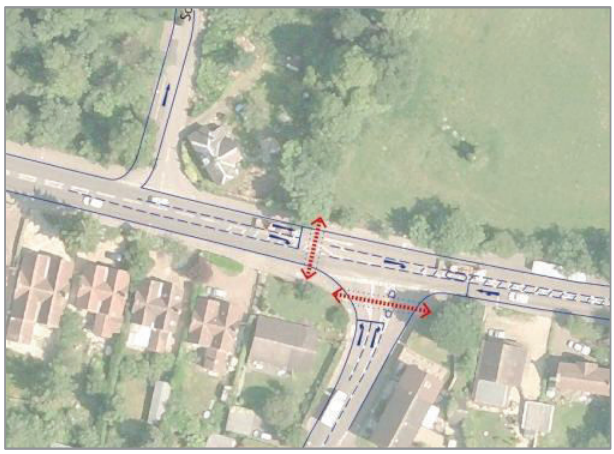


Figure 8: Hatfield Road/Colney Heath Lane Junction (Indicative Layout – Roundabout Option)

Figure 9: Hatfield Road/Colney Heath Lane Junction (Indicative Layout – Signalised Junction Option)



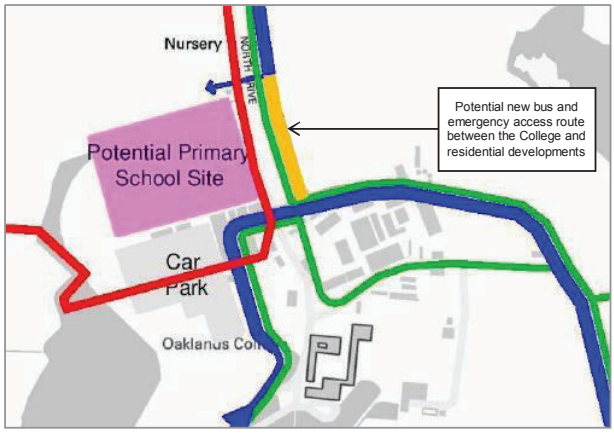
Access Strategy: Internal Connections

It is envisaged that a new road link would be created across the St Albans Campus, linking Sandpit Lane and Hatfield Road. It is not currently proposed that this route would be open to general traffic, as this would potentially encourage traffic to rat-run through the College site to avoid congestion on the local road network, particularly as the new route would offer a shorter and quicker journey than the alternative route via Oaklands Lane.

To prevent the link road being used as a through route, it is proposed that the section of road adjacent to the potential primary school site, which links the residential and College developments, would be a controlled link for use by buses and emergency vehicles only. Use of the link would be controlled by means of rising bollards or similar physical measures. The location of the link is shown in **Figure 10**.

Consideration will be given to whether it is necessary to allow some traffic from the residential development to use the link road to access Hatfield Road to spread demand across both road corridors. Further work would be required to determine what level of use is appropriate, taking account of the potential security and safety implications of routing additional traffic through the College campus; the ability of the Hatfield Road corridor to accept additional traffic; and the means of managing access between the two developments.

Figure 10: Potential Internal Bus Link



Sustainable Transport Strategy

02

Sustainable Transport Strategy: Overview

From a transport perspective, the sustainability credentials of a future residential development on the Oaklands site would depend on establishing high quality walking, cycling and public transport links that offer residents with a credible alternative to car travel.

The emerging masterplan for the College's St Albans Campus site envisions a range of improvements to the network of walking and cycling routes that cross the campus in combination with enhancements to bus access that would significantly improve the accessibility of both the College and residential developments and provide improved connections towards St Albans, Hatfield and Welwyn Garden City.

A potential sustainable transport strategy for the site is described in more detail in the following pages.

Sustainable Transport Strategy: Walking & Cycling

Existing Network

The St Albans Campus is already crossed by a number of public rights of way; North Drive and South Drive form a continuous north-south bridleway linking Sandpit Lane to Hatfield Road, while East Drive is designated as a footpath and connects the College campus to Oaklands Lane to the east.

To the south of the site, the Alban Way forms a major off-road cycle route linking Hatfield and St Albans, while to the north The Ridgeway, Jersey Lane and House Lane/Sandringham Road provide on and off-road options for cyclists.

The existing walking and cycling links on the Oaklands College site and in the local area are shown in **Figure 11**.

Emerging On-Site Strategy

A range of enhancements are envisaged to the rights of way network on the College site as part of the emerging masterplan.

South Drive would become a one-way road in the northbound direction which would allow part of the existing carriageway to be converted into a segregated two-way cycle lane providing improved cycle access into the College from the south.

A shared footway/cycleway would be provided alongside the residential access road from Sandpit Lane with an east-west spur serving the residential site.

East Drive would be upgraded from footpath to bridleway status, while a new footpath would be provided along the south-eastern boundary of the site linking East Drive with Hatfield Road.

The masterplan also includes identified routes for walking, jogging or running around the perimeter of the Oaklands site.

Emerging Off-Site Strategy

In addition to the on-site improvements, consideration will also be given to providing new and improved connections that link both the College and residential development into the surrounding network of walking and cycling routes.

To the north of the site, the potential to provide shared footway/cycleway connections alongside Barnfield Road and House Lane will be investigated, connecting the College to the existing routes on The Ridgeway and Sandringham Road.

To the south of the site, the importance of providing improved connections to the Alban Way is recognised, with new pedestrian and cycle crossings on Hatfield Road at the new College access roundabout and at the Colney Heath Lane junction.

The masterplan envisions improvements to the shared footway/cycleway through Alban Park providing a more attractive link onto the Alban Way towards Hatfield and the establishment of a new shared footway/cycleway alongside Colney Heath Lane providing a new walking and cycling link on to the Alban Way towards St Albans City Centre.

The on-site and wider area enhancements that are envisaged as part of the emerging masterplan are shown indicatively in **Figure 12**.

Figure 11: Existing Walking & Cycling Networks

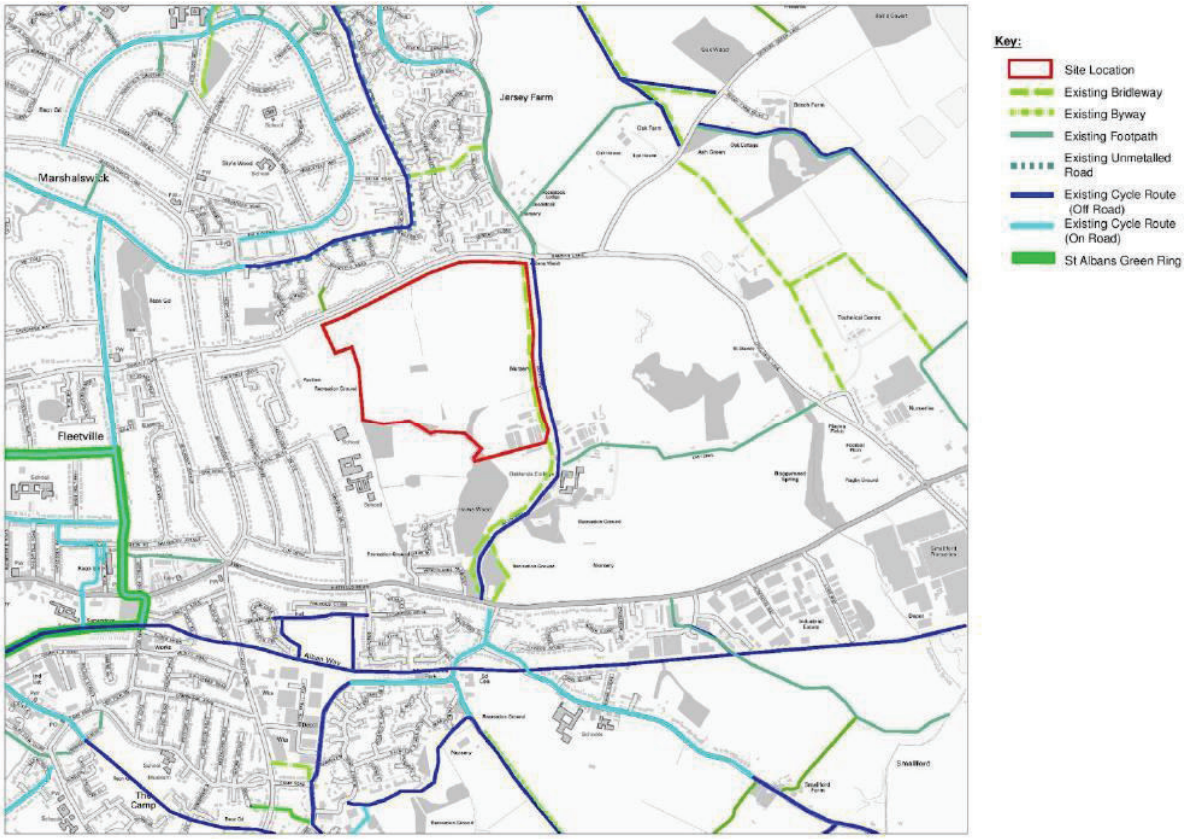
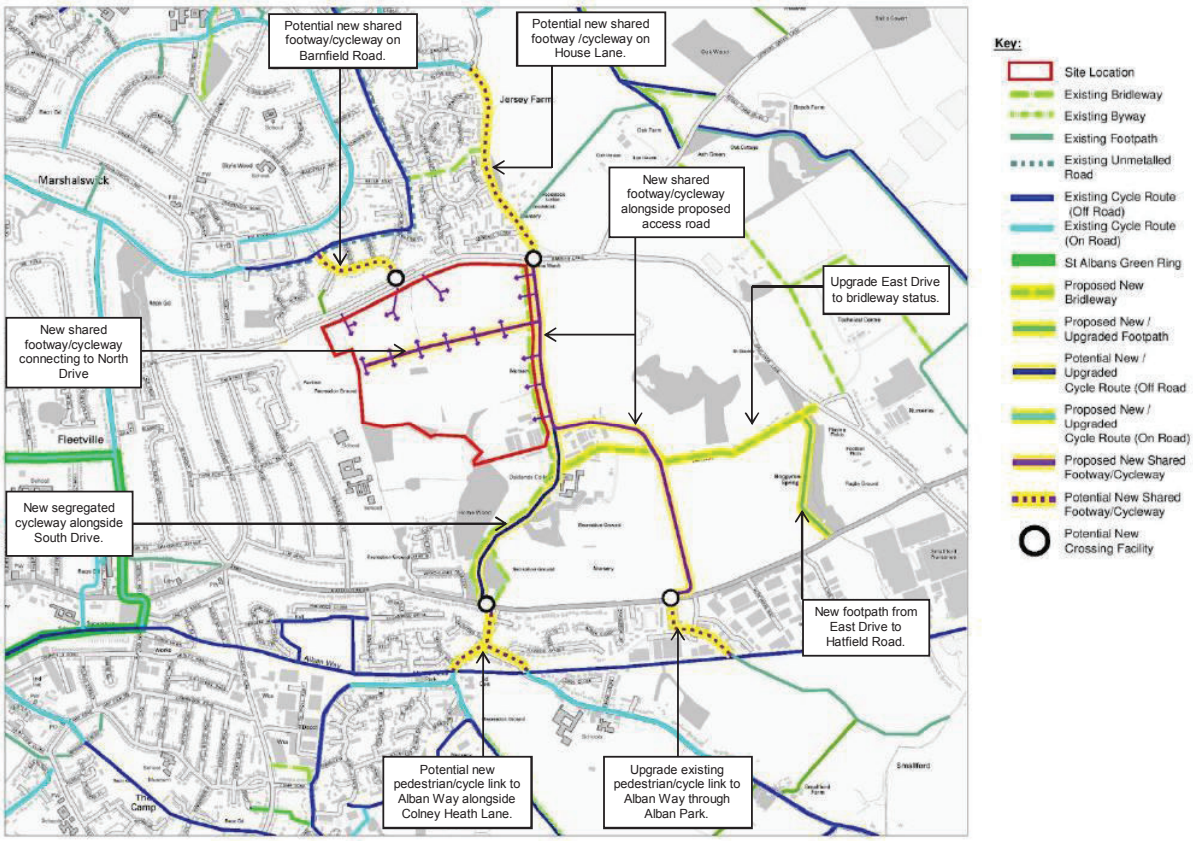


Figure 12: Indicative Walking & Cycling Strategy



Sustainable Transport Strategy: Public Transport

Existing Bus Links

The St Albans Campus is already served by numerous bus routes that operate along Hatfield Road, with the closest bus stops being located on Hatfield Road either side of the junctions with Colney Heath Lane and South Drive. These services provide fast and frequent connections to a range of destinations, most notably towards St Albans city centre and City rail station to the west and towards Hatfield and Welwyn Garden City to the east. College staff and students benefit from discounts on services operated by Uno, including the 601 (St Albans to Welwyn Garden City) and 602 (Hatfield to Watford).

Uno's 653 bus service operates along Sandpit Lane to the north of the site, providing a 20 minute frequency service between St Albans and Welwyn Garden City via Hatfield. The closest stops to the site are located on Sandpit Lane at the junctions with Marshalswick Lane to the west and the junction with House Lane to the north.

Emerging Bus Strategy

While the bus routes on Hatfield Road are used by College staff and students, the fact that bus services do not penetrate the College site means some potential passengers may be deterred from using them and that they would be unlikely to be extensively used by residents of a new residential development to the north.

The emerging masterplan therefore includes proposals to provide a bus link through the Oaklands College site connecting Sandpit Lane and Hatfield Road. This would allow the existing 653 bus service to be diverted through the site, thereby serving both the residential development and College campus, rather than along Oaklands Lane to the east.

The bus link also introduces the potential for a new circular service to be established that links the College and residential developments to St Albans city centre and City rail station.

In addition, the changes proposed to the College access arrangements would create a loop through the site, which would enable bus services operating along Hatfield Road such as the 601 and 602 to directly serve the College campus.

In combination these changes would ensure that the whole of the College campus and residential development are within 400m walk of a bus stop that is served by a high frequency bus service (at least 3 buses per hour).

The potential diversions of existing bus routes are shown in **Figure 13** and **Figure 14** while the new circular route is shown in **Figure 15**.

Figure 13: Potential diversion of 653 Bus Service

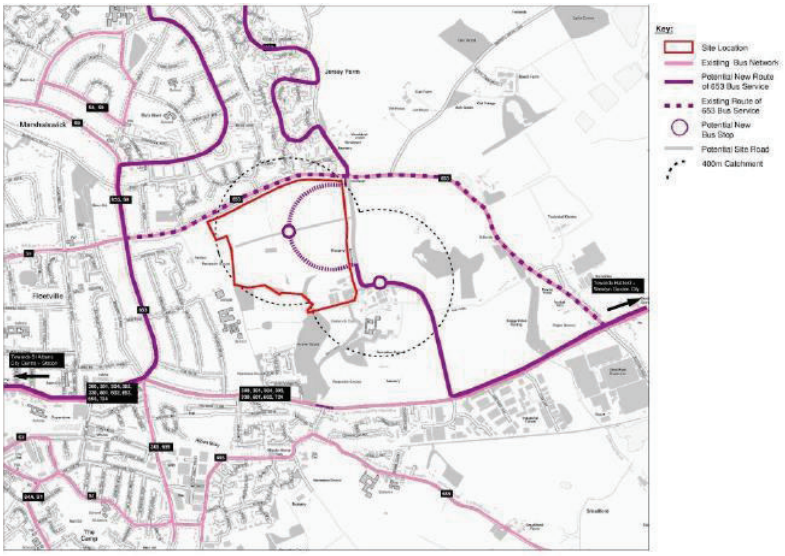


Figure 14: Potential diversion of 601 and 602 Bus Services

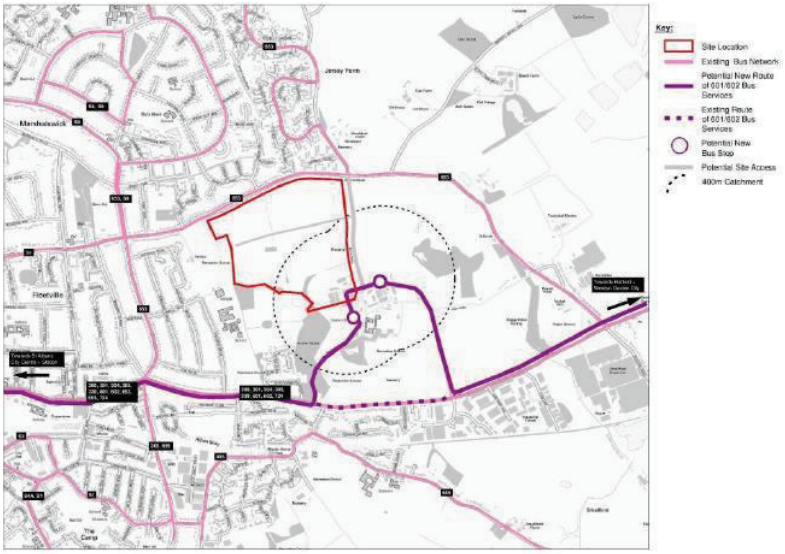
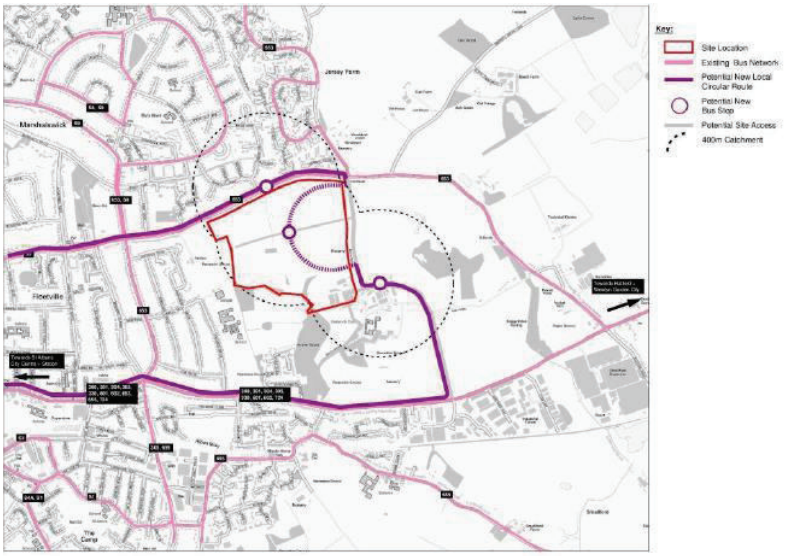


Figure 15: Potential new circular route



Highway Strategy

03

Highway Strategy: Vehicle Trip Generation

An initial high-level trip generation and distribution exercise has been carried out to determine the potential number of car trips that would be generated by a development of 1,000 residential units and the potential implications of this traffic on the surrounding local road network.

The private and affordable residential vehicular trip rates underpinning the planning application for the initial phase of the residential development have been used as the basis for this initial assessment.

The emerging masterplan includes an aspiration to provide 40% affordable housing, which is typically a lower traffic generator than private housing.

As the masterplan also includes a new two form primary school, it is expected that the majority of primary school aged children living within the residential development would attend this new school and therefore would not need to leave the development. These education trips have therefore been discounted in the trip generation calculations.

The emerging masterplan also envisages a small number of affordable units specifically targeted at College staff and students. It is expected that these units would generate very few external vehicular trips in the peak hours and therefore these trips have also been discounted in the trip generation calculations.

Table 1 summarises the estimated peak hour vehicular trip generation for the full allocation of 1,000 residential units.

Table 1: Initial Peak Hour Vehicular Trip Generation Estimates

	AM Peak (0800-0900)			PM Peak (1700-1800)		
Housing Type	**Arr**	**Dep**	**2-Way**	**Arr**	**Dep**	**2-Way**
Private	65	178	243	234	141	375
Affordable	16	61	78	107	68	174
Total Vehicle Trips	**81**	**239**	**320**	**341**	**208**	**549**

Highway Strategy: Initial Impact Assessment

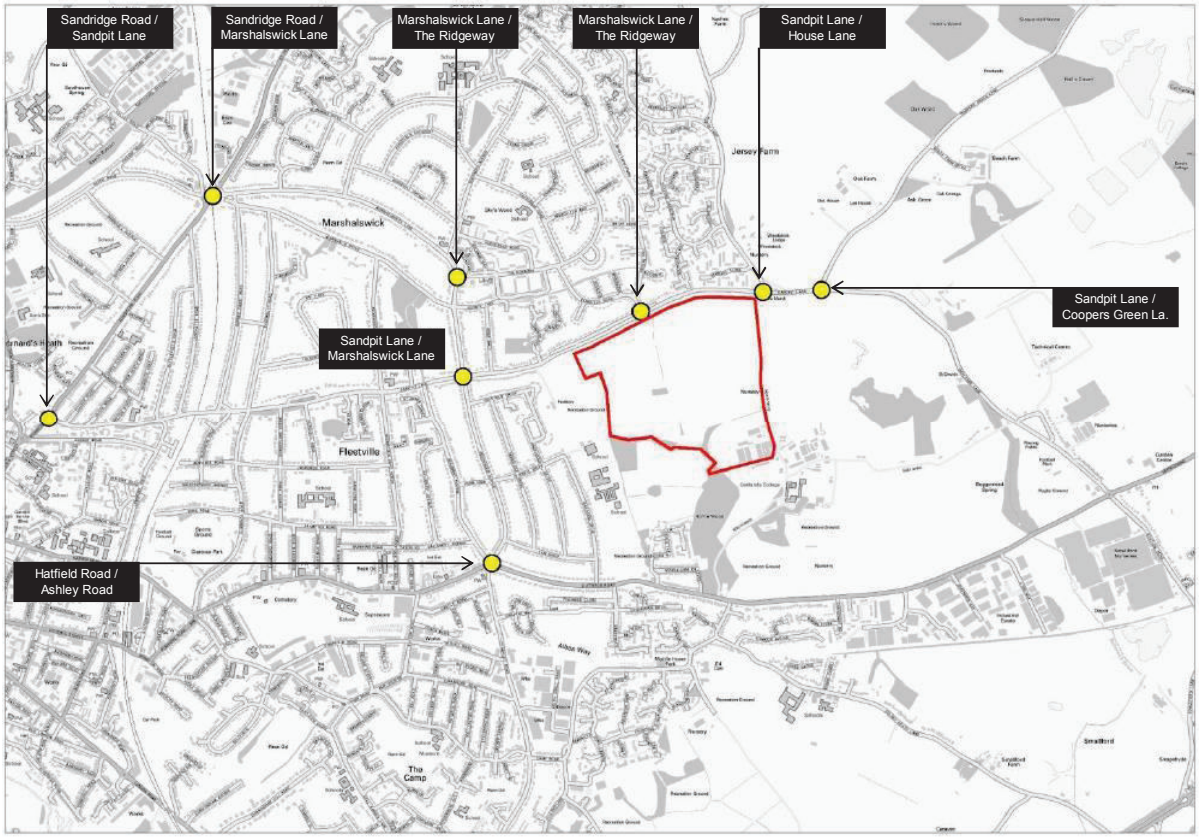
Vehicular trips have been assigned to the local highway network using the same distribution assumptions as used in the planning application for the initial phase of the residential development. The resultant development flows have been compared with future traffic forecasts in 2021 to determine the potential implications of the residential development on the surrounding local road network.

Figure 16 shows the junctions where traffic flows would be likely to increase by 5% or more in either the morning or evening peak hour as a result of the full residential development.

The largest increase in traffic flows is forecast to occur at the Marshalswick Lane/Sandpit Lane junction as the majority of the traffic from the residential development would be expected to pass through this junction. Significant traffic increases are also anticipated on Sandpit Lane at the junctions with Barnfield Road and House Lane, while there is potential for traffic flows to increase by more than 5% in the following locations:

- Marshalswick Lane/The Ridgeway (mini-roundabout);
- Sandridge Road/Sandpit Lane (priority T-junction); and
- Hatfield Road/Beechwood Avenue/Ashley Road (double mini-roundabout)

Figure 16: Initial Assessment of Impact in 2021



Highway Strategy: Off-Site Mitigation

The initial assessment of the potential development impacts suggests that a number of junctions in the local area may require improvement to accommodate the forecast levels of traffic associated with a residential development of 1,000 units. Consideration has therefore been given to the potential nature of the improvements that may be required at key off-site junctions.

Sandpit Lane/Marshalswick Lane Junction

Improvements to this junction were put forward as part of the planning application submitted for the initial phase of the residential development to provide additional capacity to accommodate the extra traffic generated by the development. The proposed improvements included removal of the existing pedestrian refuges and widening of the western and southern approaches to improve the overall throughput of the junction.

In order to accommodate the additional traffic that would be generated by a larger housing allocation, further improvements at this junction would be required. Two preliminary options have been considered for this junction.

The first option builds upon the improvements that are proposed as part of the initial phase of the residential development. It would involve widening the eastern approach to the existing junction to provide two lanes in the westbound direction and potentially banning the right turn movement from Marshalswick Lane (north) into Sandpit Lane (west).

The second option would involve replacing the existing signalised junction with a compact roundabout. Peak hour traffic flows on all four arms of the junction are relatively balanced, so a roundabout solution may improve traffic flow compared with the existing traffic signals. However, consideration would also need to be given to the impacts of a roundabout pedestrians and cyclists.

Initial concept designs have been developed for both options (see **Figure 17** and **Figure 18**), which indicate that the improvements could be delivered within the available highway land. However, both options would result in the loss of verges and some mature trees.

Initial junction assessments suggest that both of these options have potential to achieve nil-detriment (i.e. traffic conditions that are no worse with the development than if it did not go ahead). This indicates that the impact of the development on this junction can be overcome with careful mitigation, although further design and detailed modelling would need to be undertaken to confirm the most appropriate solution.

Figure 17: Sandpit Lane/Marshalswick Lane Junction (Indicative Layout – Signalised Junction Option)

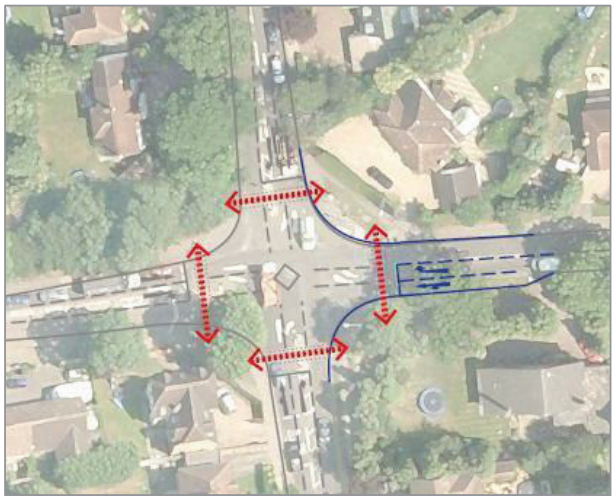
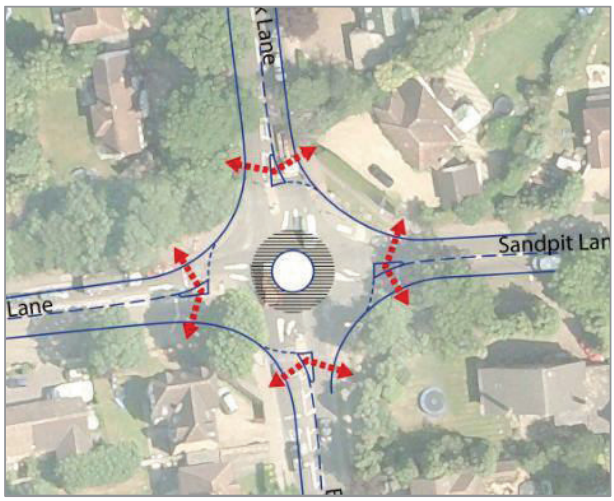


Figure 18: Sandpit Lane/Marshalswick Lane Junction (Indicative Layout – Compact Roundabout Option)



Sandpit Lane/House Lane Junction

As discussed earlier in this document, it is proposed that existing roundabout at the junction of Sandpit Lane and House Lane would be enlarged to accommodate an additional arm serving the residential development and also to provide increased capacity for the additional development traffic that would use this junction.

Sandpit Lane/Coopers Green Lane Junction

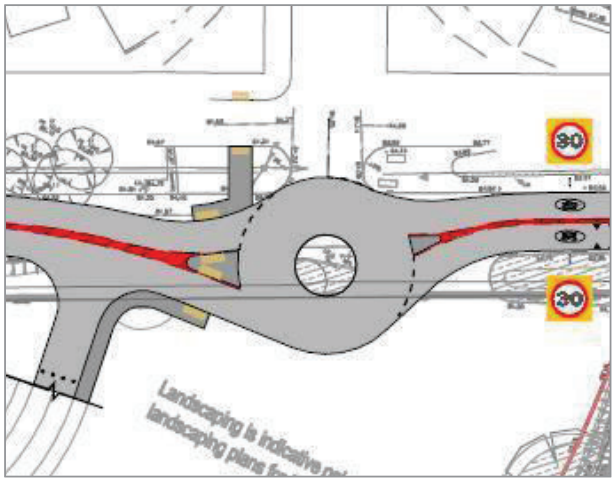
Improvements would also be required at the junction of Sandpit Lane and Coopers Green Lane to accommodate the additional development traffic and improve the existing layout. The potential improvements could include enlarging the existing roundabout within the available highway land to provide additional capacity and increasing deflection to slow approach speeds and improve safety. An indicative junction layout is shown in **Figure 19**, although this would require further design and detailed modelling to determine the appropriate geometry.

Figure 19: Sandpit Lane/Coopers Green Lane Junction (Indicative Layout)

Sandpit Lane/Barnfield Road Junction

The highway proposals associated with the initial phase of the residential development included conversion of the Sandpit Lane/ Barnfield Road junction from a priority T-junction into a compact roundabout in order to help enforce the proposed reduction in speed limit on Sandpit Lane to 30mph. The proposed layout is shown **Figure 20**.

Figure 20: Sandpit Lane/Barnfield Road Junction (Proposed Layout)



Sandpit Lane/Damson Way Junction

In order to further reduce vehicle speeds on Sandpit Lane the highway proposals associated initial phase of the residential development also included minor alterations to the junction with Damson Way, including moving the give-way line to improve visibility on the minor arm and introducing a traffic island to the west of the junction.

Need for Additional Mitigation

There are a number of other junctions where traffic flows are predicted to increase as a result of the development. A detailed Transport Assessment would need to be undertaken to determine the extent of the development impacts in these locations, with further work required to determine whether mitigation is required and the nature of the potential interventions.

Demand Management

Any future development would be supported by detailed Travel Plans, which set out the measures and initiatives that would be implemented to promote sustainable modes of transport and reduce the reliance on car travel.

The College already has a comprehensive Travel Plan that includes a wide range of measures to promote walking, cycling and bus travel, including discounted bus travel and improvements to the existing bus stops on Hatfield Road.

A similar document would be prepared for the residential development, which would detail the measures that would be implemented to encourage sustainable travel behavior and deter unnecessary car use.

Summary

04

Summary

The emerging masterplan for Oaklands College's envisions a high quality and sustainable residential development of 1,000 units on land to the north of the existing College development. A high proportion of this housing would be affordable tenure (42%) and it would include some College specific housing.

In addition to the proposed housing, the masterplan also includes allowance for a new primary school which would serve the needs of the development and help to reduce the travel demand generated by the development, particularly during the morning peak period.

From a transport perspective, the masterplan includes a range of potential transport interventions, including:

- A new entrance to the College on Hatfield Road that would reduce the amount of traffic using South Drive, thereby facilitating improvements to arrangements for pedestrians and cyclists on this busy part of the road network;
- Two new vehicular accesses on Sandpit Lane combined with additional emergency accesses to serve the proposed residential development. All new accesses would also incorporate provision for pedestrians and cyclists;
- Improvements to the existing network of footpaths and bridleways that cross the site supported by a network of new pedestrian and cycle routes that enhance access to the campus from Sandpit Lane to the north and Hatfield Road to the south as well as ensuring interconnectivity between the College and residential developments;
- Enhancements to existing walking and cycling routes to the north and south of the site to link the campus into the surrounding network of walking and cycling routes including the Alban Way;
- A new road link across the site that links Sandpit Lane and Hatfield Road, opening up opportunities for significantly improved bus access to both the College and residential developments;
- A range of improvements to existing junctions in the immediate vicinity of the site to improve safety and provide increased capacity to accommodate the additional traffic movements that could be generated by the residential development.

The proposed transport interventions would significantly enhance access to the College's St Albans Campus, while also putting in place the transport infrastructure required to support a major residential development in East St Albans.

It is considered that there are no fundamental transport issues associated with the emerging masterplan that could not be overcome through careful planning and considerate design combined with the provision of an appropriate package of sustainable transport proposals, demand management measures and on- and off-site highway improvement schemes.

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“The Oaklands Masterplan provides a once in a generation opportunity to establish a community which can offer a wide range of benefits and opportunity to its residents that at its heart is focused on education and the improvement of lives.”

Oaklands College Strategic Local Plan Submission

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Appendix 11: AECOM St Albans East Initial Assessment of Highway Impacts (March 2016)

AECOM

Strategic Local Plan: St Albans East (Oaklands)

Initial Assessment of Highway Impacts

Prepared on behalf of Oaklands College and Taylor Wimpey North Thames

March 2016

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Contents

“Our vision for the site is to create high quality new homes set within an integrated sustainable masterplan connecting directly into the College; putting the College even more firmly at the heart of the community with public access through footpaths and cycle paths to our parkland and our agricultural setting.”

Oaklands College Strategic Local Plan Submission

Oaklands College Masterplan

01

01 Introduction & Background

Draft Strategic Local Plan

The draft Strategic Local Plan (SLP) produced by St Albans City and District Council (SACDC) covers the period 2011-2031 and includes the potential release of Green Belt land in East St Albans (Oaklands) for a residential development of 1,000 units.

Oaklands College's vision is to create an exemplar high quality residential development of approximately 1,000 units on land to the north of the existing College development. A planning application for an initial phase of approximately 350 residential units has already been submitted to SACDC (Application reference 5/2013/2589). This is an enabling development, the receipts of which would fund improvements to the College facilities.

Background

As part of the ongoing consultation process for the draft SLP, SACDC invited landowners/promoters to submit their vision for the development sites allocated within the draft SLP. An initial masterplan for the Oaklands College site was developed and submitted to SACDC in November 2015. The area covered by the masterplan is shown in Figure 1.1 below.

Following submission of the masterplan document, an emerging transport strategy for the East St Albans (Oaklands) allocation was submitted to SACDC in February 2016, which outlined a potential access strategy for all modes of transport and a range of potential on- and off-site improvements designed to improve the accessibility of the site on foot, by cycle and by public transport as well as identifying the nature of potential off-site highway mitigation measures. The emerging access strategy is illustrated in Figure 1.2

Purpose of this Report

This report builds upon the information set out in the emerging transport strategy document. It sets out initial trip generation forecasts for the full allocation of 1,000 units and goes on to assess the impact that this level of development is likely to have on the key junctions surrounding the Oaklands College site. It goes on to consider the potential nature of junction improvements that may be required to accommodate the additional traffic that would be generated by the full allocation.

Figure 1.1: Oaklands College Masterplan Area

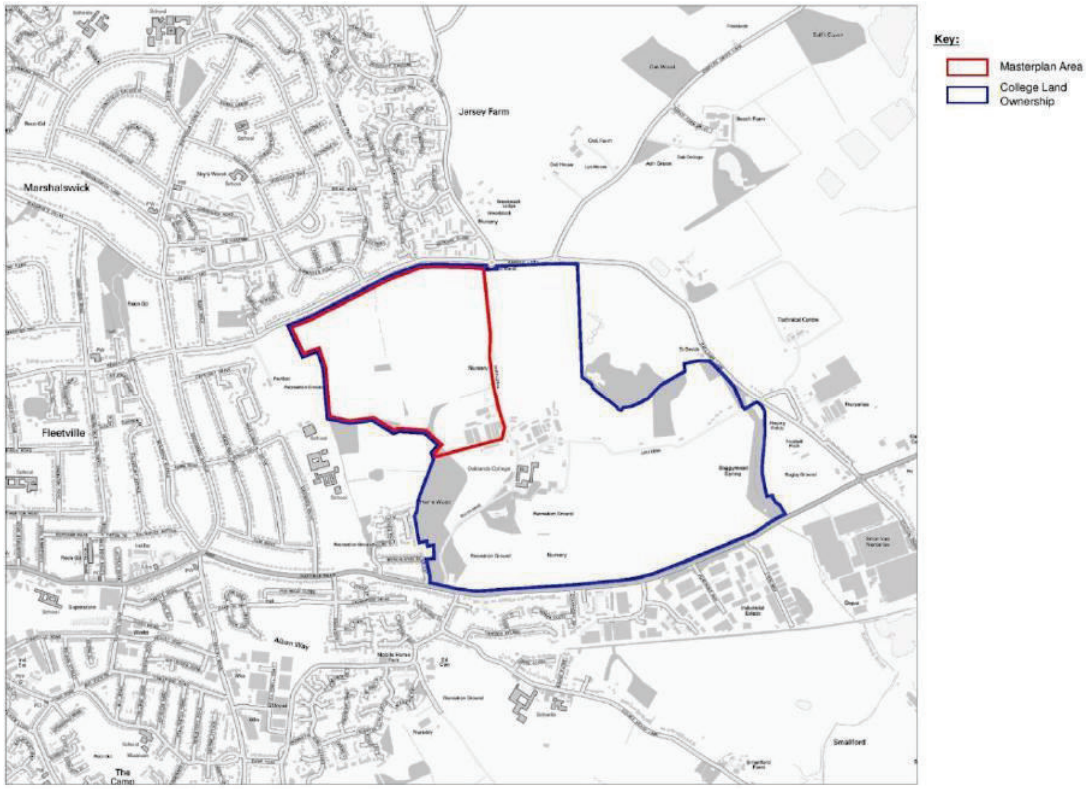
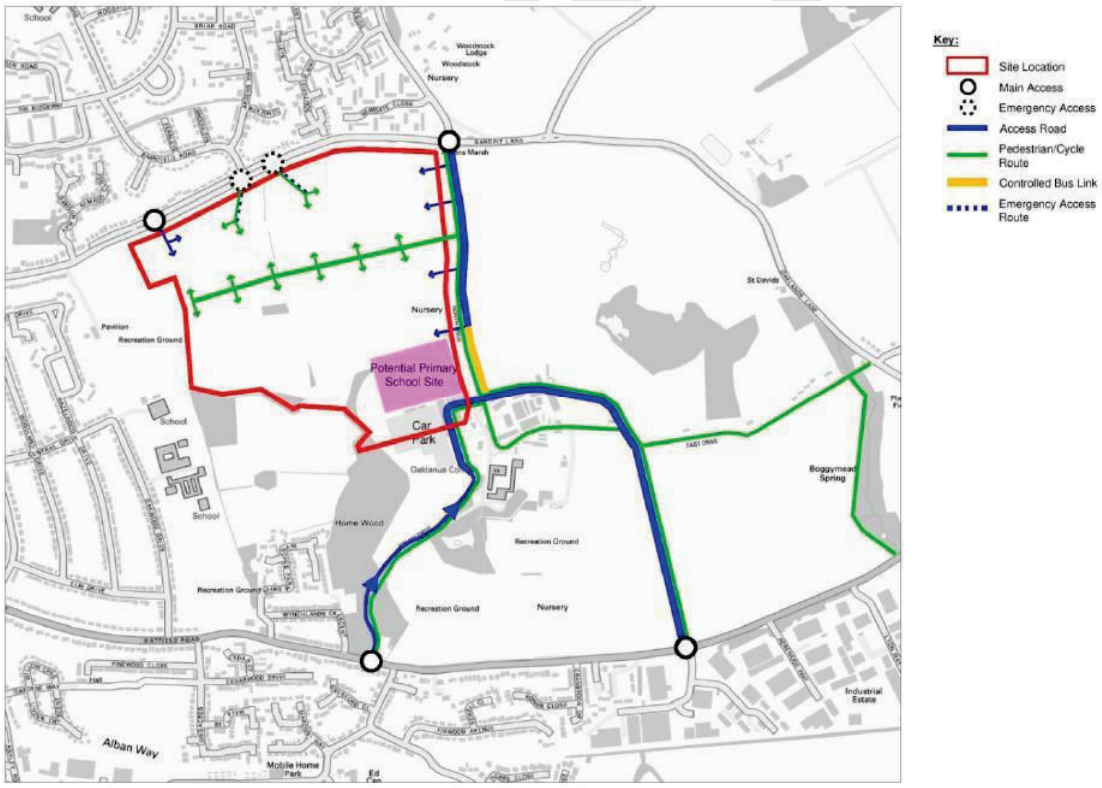


Figure 1.2: Emerging Access Strategy



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Trip Generation Forecasts

02

02 Trip Generation Forecasts

Development Quantum

The draft SLP indicates that the East St Albans (Oaklands) site could accommodate 1,000 dwellings. As noted above a planning application for an initial phase of approximately 350 units has already been submitted to SACDC.

The College's emerging masterplan includes an aspiration to provide 42% affordable housing across the whole site, which is typically a lower traffic generator than private housing. This includes a small number of affordable units specifically for College staff and students.

Table 2.1 below summarises the proposed quantum of development by phase. It is envisaged that the development would comprise a mixture of unit types, ranging from 1 and 2-bed flats to 5-bed houses.

Table 2.1: Indicative Quantum of Development

Housing Type	Initial Phase	Later Phases	Total
Private	227	357	584
Affordable (General)	123	273	396
Affordable (College)	0	20	20
Total	**350**	**650**	**1,000**
% Affordable	**35%**	**45%**	**42%**

Vehicle Trip Rates

The private and affordable residential vehicular trip rates underpinning the planning application for the initial phase of the masterplan have been used as the basis for this assessment.

The trip rates applied reflect the anticipated mix of tenures and unit types. As the masterplan includes a small number of affordable units for use by the College it is expected that these units would generate very few if any vehicular trips in the peak hours and therefore for the purposes of this initial assessment the trip rates for these units have been set to zero.

Table 2.2 below summarises the peak hour vehicle trip rates for private, affordable and College accommodation.

Table 2.2: Peak Hour Vehicular Trip Rates

	AM Peak (0800-0900)			PM Peak (1700-1800)		
Housing Type	**Arr**	**Dep**	**2-Way**	**Arr**	**Dep**	**2-Way**
Private	0.153	0.418	0.5711	0.410	0.246	0.656
Affordable (General)	0.056	0.214	0.270	0.276	0.175	0.451
Affordable (College)	**0.000**	**0.000**	**0.000**	**0.000**	**0.00**	**0.000**

Initial Vehicular Trip Generation Forecasts

In order to calculate the vehicular trip generation for the site, the vehicular trip rates in Table 2.2 have been applied to the indicative housing mix in Table 2.1. Table 2.3 below summarises the peak hour vehicular trip generation forecasts for the initial and later phases of the masterplan.

Table 2.3: Indicative Peak Hour Vehicular Trip Generation

	AM Peak (0800-0900)			PM Peak (1700-1800)		
Housing Type	**Arr**	**Dep**	**2-Way**	**Arr**	**Dep**	**2-Way**
Initial Phase (350 units)						
Private	35	95	130	93	56	149
Affordable (General)	7	26	33	34	21	55
Affordable (College)	0	0	0	0	0	0
Total	**42**	**121**	**163**	**127**	**77**	**204**
Later Phases (650 units)						
Private	55	149	204	147	88	235
Affordable (General)	15	58	74	75	48	123
Affordable (College)	0	0	0	0	0	0
Total	**70**	**208**	**278**	**222**	**136**	**358**
Combined (1,000 units)						
Private	90	245	334	240	144	384
Affordable (General)	22	85	107	109	69	178
Affordable (College)	0	0	0	0	0	0
Total	**112**	**329**	**441**	**349**	**213**	**562**

Internalisation of Primary School Trips

The masterplan includes a new two form of entry (2FE) primary school and therefore it is expected that all of the primary school aged pupils living within the site would attend this new school. The vehicular trip rates include education and education escort trips and therefore these trips have been discounted from the trip generation forecasts.

In order to calculate the proportion of education trips relating to primary school students, data from the National Travel Survey (September 2015) and 2011 Census have been used. The NTS indicates that in the morning (0800-0900) 50% of weekday trips are classified as 'Education' or 'Education Escort', while in the evening (1700-1800) only 4% of trips are education related.

Population age data has been extracted from the 2011 Census for the Lower Super Output Area (LSOA) around the Oaklands site (St Albans 015D). This indicates that there were 250 people of school age (5-16 years old) in this LSOA in 2011, of which 137 (55%) were of primary school age (age 5-10 old) and 113 (45%) are of secondary school age (11-16 years old).

The reduction in vehicle trips has been calculated by applying the proportion of education and education escort trips (50% in morning, 4% in evening) to the percentage of primary school age pupils (55%). Table 2.4 summarises the peak hour reduction that has been applied to the vehicle trip generation forecasts in Table 2.3 above.

Table 2.4: Primary School Reduction

	AM Peak (0800-0900)	PM Peak (1700-1800)
% Education Trips	50%	4%
Primary Age	55%	55%
Trip Rate Reduction	**27%**	**2%**

Adjusted Vehicular Trip Generation Forecasts

Table 2.5 below summarises the resultant peak hour vehicular trip generation forecasts for the site which have been adjusted to remove the internal trips to and from primary school.

Table 2.5: Adjusted Peak Hour Vehicular Trip Generation

	AM Peak (0800-0900)			PM Peak (1700-1800)		
Housing Type	**Arr**	**Dep**	**2-Way**	**Arr**	**Dep**	**2-Way**
Initial Phase (350 units)						
Private	25	69	94	91	55	146
Affordable (General)	5	19	24	33	21	54
Affordable (College)	0	0	0	0	0	0
Total	**30**	**88**	**118**	**124**	**76**	**200**
Later Phases (650 units)						
Private	40	109	148	143	86	229
Affordable (General)	11	42	54	74	47	120
Affordable (College)	0	0	0	0	0	0
Total	**51**	**151**	**202**	**217**	**133**	**349**
Combined (1,000 units)						
Private	65	178	243	234	141	375
Affordable (General)	16	61	78	107	68	174
Affordable (College)	0	0	0	0	0	0
Total	**81**	**239**	**320**	**341**	**208**	**549**

Future Traffic Forecasts

03

03 Future Traffic Forecasts

Baseline Traffic Data

Traffic surveys undertaken as part of the work underpinning the planning application for the initial phase of the masterplan have been used as the basis for assessing the potential impacts of a development of 1,000 homes on the Oaklands College site.

A set of manual classified turning counts (MCTCs) were undertaken between 0700 and 1900 on Wednesday 28 November 2012 at the following junctions.

- A1057 Hatfield Road / Colney Heath Lane / South Drive;
- Sandpit Lane / Beechwood Avenue / Marshalswick Lane;
- Sandpit Lane / House Lane; and
- Sandpit Lane / Coopers Green Lane / Oaklands Lane.

Future Base Traffic Flows

The draft SLP covers the period up to 2031, therefore for the purpose of this exercise growth factors covering the period 2012-2031 have been applied to the base traffic surveys to produce initial forecasts of future base traffic flows in 2031.

HCC is currently developing a Countywide Transport Model (COMET) which will provide a platform to test strategic mitigation measures and growth scenarios across Hertfordshire. This model will feed into the emerging HCC 'Transport Vision' (a successor to Local Transport Plan 3), which will then identify packages of transport interventions to enable growth across the county to 2050. COMET is considered to be the best source of future traffic growth forecasts, however the COMET model is still under development and is not due to be available to test options until later in the year.

As data from the COMET model is currently unavailable, a number of alternative data sources of traffic growth factors have been analysed including:

- TEMPRO;
- DfT Annual Average Daily Flow; and
- DIAMOND.

The TEMPRO 6.2 database with dataset 62 has been used to forecast background traffic growth in St Albans (26UG2) over the period from 2012 to 2030 based on the National Trip End Model (NTEM) and local planning data. The TEMPRO factor for the morning peak period (0700-1000) is 1.2431 while the factor for the evening peak period (1600-1900) is 1.2365.

The DfT hold annual traffic data figures for A-roads in Hertfordshire covering the period from 2000 to 2014. Annual Average Daily Flow (AADF) figures are provided for a number of sites in St Albans. For the purpose of this exercise, two sites on Hatfield Road were chosen; the first is located at the junction with Lyon Way (site 7074) and the second is located at the junction with Clarence Road (site 78321). The growth in traffic between 2012 and 2014 on the Lyon Way site was 1.026 while growth on the Clarence Road site was 1.028. As these sites have very similar levels of growth, an average of the two values has been taken (1.027).

DIAMOND (Development Impact Assessment Model of Network Demand) is a model that has been jointly developed by AECOM and the Highways Agency to assess the traffic impact of proposed growth. There are several instances of DIAMOND covering different areas of the UK. The work undertaken for the initial phase of the Oaklands development is based on the Hertfordshire DIAMOND model. Base year traffic forecasts from DIAMOND for the roads in the immediate vicinity of the site have been analysed for the period from 2012 to 2021. The growth factor in the morning peak hour is 1.099 while the factor for the evening peak hour is 1.117.

Table 3.1 summarises the different sources of traffic growth factors discussed above and converts them to average annual growth factors to allow direct comparison. For the purposes of this assessment the highest of these annual growth factors has been used for forecast potential future traffic levels, as this represents a worst case scenario.

Table 3.1: Traffic Growth Factors

Source	Annual Growth Factors	
	AM Peak (0800-0900)	PM Peak (1700-1800)
TEMPRO	1.0122	1.0119
DfT	1.0135	1.0135
DIAMOND	1.0106	1.0124
Maximum	**1.0135**	**1.035**

Traffic Distribution from Masterplan Site

Vehicular trips have been assigned to the local highway network using the same distribution assumptions as used in the planning application for the initial phase of the residential development. Table 3.2 below summarises the assignment of masterplan site traffic by time period.

Table 3.2: Distribution of Traffic from Masterplan Site

Route	Corridor	AM Peak (0800-0900)		PM Peak (1700-1800)	
		Arr	Dep	Arr	Dep
St Albans	Sandpit Lane	29%	24%	39%	29%
	Hatfield Road (W)	9%	10%	7%	1%
	Marshalswick Lane	10%	22%	14%	12%
	Ashley Road	4%	10%	3%	0%
	Colney Heath Lane	9%	16%	9%	33%
	House Lane	2%	0%	0%	0%
	Barnfield Road	0%	0%	0%	0%
	The Ridgeway	0%	0%	0%	0%
	Sub-Total	**63%**	**83%**	**72%**	**76%**
Hatfield	Hatfield Road (E)	12%	8%	17%	15%
	Station Road	15%	0%	10%	0%
	Sub-Total	**28%**	**8%**	**27%**	**15%**
Welwyn Garden City	Coopers Green Lane	9%	9%	2%	9%
	Sub-Total	**9%**	**9%**	**2%**	**9%**
Total		**100%**	**100%**	**100%**	**100%**

Table 4.2 indicates that the majority of traffic generated by the site is forecast to use the Sandpit Lane, Marshalswick Lane and Hatfield Road corridors in both the morning and evening peak hours.

Future Base + Development Traffic Flows

Traffic flows for the 2031 'Future Base + Development' scenario have been derived from combining the traffic flows associated with the full allocation (1,000 units) with the 2031 'Future Base' traffic flows.

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Development Impacts

04

04 Development Impacts

Initial Assessment of Impact

As discussed above, runs from the COMET model are currently unavailable and therefore for the purposes of this assessment detailed junction analysis has only been undertaken for the junctions assessed as part of the planning application for the initial phase of the residential development.

Table 4.1 below summarises the impact that the additional traffic is likely to have on each of these junctions in terms of overall traffic volumes in 2031 with and without the traffic generated by the Oaklands masterplan. For the avoidance of doubt, the future base traffic forecasts assume that no development has taken place on the Oaklands College site and therefore do not include any development traffic associated with the Oaklands masterplan.

Table 4.1: Impact of Masterplan Traffic on Total Junction Flows

Junction	Base (2012)	Future Base (2031)	Future Base+Dev (2031)	Impact
AM Peak (0800-0900)				
Sandpit Lane/House Lane	2,325	2,356	2,584	+10%
Sandpit Lane/Coopers Green Lane	2,281	2,312	2,380	+3%
Sandpit Lane/Marshalswick Lane	2,446	2,479	2,729	+10%
Hatfield Road/Colney Heath Lane	1,885	1,911	1,854	-3%
PM Peak (1700-1800)				
Sandpit Lane/House Lane	1,944	1,970	2,372	+20%
Sandpit Lane/Coopers Green Lane	1,765	1,789	1,931	+8%
Sandpit Lane/Marshalswick Lane	2,391	2,423	2,830	+17%
Hatfield Road/Colney Heath Lane	1,646	1,668	1,677	+1%

Sandpit Lane/House Lane and Sandpit Lane/Marshalswick Lane junctions are forecast to experience the largest change in overall traffic flows, with potential for increases in traffic of up to 20%. The Sandpit Lane/Coopers Green Lane junction is forecast to experience lower levels of growth at around 3-8%, while traffic flows are forecast to marginally reduce at the Hatfield Road/Colney Heath Lane junction due to the reassignment of College traffic associated with the proposed new access junction further to the east on Hatfield Road at the junction with Alban Park.

Further assessment of the potential impacts of the masterplan traffic on the wider road network would need to be undertaken once traffic forecasts from the initial COMET runs become available

Performance of Existing Junctions

Junction capacity assessments have been undertaken for the 2031 'Future Base' and 2031 'Future Base + Development' scenarios in the morning and evening peak hours. Traffic flows have been input into models of the existing junctions prepared as part of the Transport Assessment submitted with the planning application for the initial phase of the masterplan. For reference the geometry underpinning the existing junction assessments is included in Appendix A.

The performance of each junction has been assessed by comparing the forecast ratio of flow to capacity (RFC) or degree of saturation (DoS) and forecast queue lengths on each of the approach arms in the 2031 'Future Base' (i.e. without the additional masterplan traffic)and 'Future Base + Development' (i.e. with the additional masterplan traffic) scenarios.

Sandpit Lane/House Lane

The operational performance of the Sandpit Lane/House Lane junction has been assessed using ARCADY6 software, which is the industry standard for predicting capacities, queues and delays at priority controlled roundabouts. The results of the junction capacity assessments presented in Table 4.2 below.

Table 4.2: Summary of Junction Capacity Assessments: Sandpit Lane/House Lane

Junction	2031 Future Base (Existing Layout)	
	Max RFC (%)	Queue (Vehs)
AM Peak (0800-0900)		
House Lane	78%	3
Sandpit Lane (E)	75%	3
Sandpit Lane (W)	107%	46
Max RFC / Queue	**107%**	**46**
PM Peak (1700-1800)		
House Lane	28%	0
Sandpit Lane (E)	91%	8
Sandpit Lane (W)	88%	6
Max RFC / Queue	**91%**	**8**

The results indicate that in the 2031 'Future Base' scenario, the junction is forecast to operate in excess of capacity in the morning peak hour with a maximum RFC of 107% and a maximum queue of 46 vehicles on Sandpit Lane (W). In the evening peak hour the junction is forecast to operate within capacity with a maximum RFC of 91% and a maximum queue of 8 vehicles on Sandpit Lane (E).

The performance of the existing junction in the 2031 'Future Base + Development' scenario has not been assessed as it is proposed to add a fourth arm to the junction to serve the masterplan site.

Sandpit Lane/Coopers Green Lane

The operational performance of the Sandpit Lane/Coopers Green Lane junction has been assessed using ARCADY6 software, which is the industry standard for predicting capacities, queues and delays at priority controlled roundabouts. Table 4.3 summarises the results of the 2031 'Future Base' and 2031 'Future Base + Development' junction capacity assessments

Table 4.3: Summary of Junction Capacity Assessments: Sandpit Lane/Coopers Green Lane

Junction	2031 Future Base (Existing Layout)		2031 Future Base+Dev (Existing Layout)		Development Impact	
	Max RFC (%)	Queue (Vehs)	Max RFC (%)	Queue (Vehs)	Max RFC (%)	Queue (Vehs)
AM Peak (0800-0900)						
Coopers Green Lane	100%	17	102%	21	+2%	+4
Oaklands Lane	51%	1	53%	1	+2%	-
Sandpit Lane (W)	97%	17	100%	27	+3%	+10
Max RFC / Queue	**100%**	**17**	**102%**	**27**	**+2%**	**+10**
PM Peak (1700-1800)						
Coopers Green Lane	83%	5	86%	5	+3%	-
Oaklands Lane	67%	2	80%	4	+13%	+2
Sandpit Lane (W)	49%	1	53%	1	+4%	-
Max RFC / Queue	**83%**	**5**	**86%**	**5**	**+3%**	**-**

The results indicate that in the 2031 'Future Base' scenario, the junction is forecast to operate at capacity in the morning peak hour but well within capacity in the evening peak hour. In the morning peak hour the junction is forecast to operate with a maximum RFC of 100% and a maximum queue of 17 vehicles on the Coopers Green Lane approach while in the evening peak hour the junction is forecast to operate with a maximum RFC of 83% and a maximum queue of 5 vehicles on the Coopers Green Lane approach.

In the 2031 'Future Base + Development' scenario, the junction is forecast to operate marginally in excess of capacity in the morning peak hour, with a maximum RFC of 102% and a maximum queue of 21 vehicles on the Coopers Green Lane approach. In the evening peak hour the junction is forecast to continue to operate within capacity with a maximum RFC of 86% and a maximum queue of 5 vehicles on the Coopers Green Lane approach.

Sandpit Lane/Marshalswick Lane

The operational performance of the Sandpit Lane/Marshalswick Lane junction has been assessed using LINSIG V3 software, which is the industry standard for predicting capacities, queues and delays at signalised junctions. Table 4.4 summarises the results of the 2031 'Future Base' and 2031 'Future Base + Development' junction capacity assessments.

Table 4.4: Summary of Junction Capacity Assessments: Sandpit Lane/Marshalswick Lane

Junction	2031 Future Base (Existing Layout)		2031 Future Base+Dev (Existing Layout)		Development Impact	
	Max DoS (%)	Queue (Vehs)	Max DoS (%)	Queue (Vehs)	Max DoS (%)	Queue (Vehs)
AM Peak (0800-0900)						
Marshalswick Lane	121%	38	142%	98	+21%	+60
Sandpit Lane (E)	133%	94	141%	143	+8%	+49
Beechwood Avenue	128%	32	157%	73	+29%	+41
Sandpit Lane (W)	124%	84	102%	34	-22%	-50
Max DoS / Queue	**133%**	**94**	**157%**	**143**	**+24%**	**+49**
PM Peak (1700-1800)						
Marshalswick Lane	100%	19	90%	20	+59%	+1
Sandpit Lane (E)	130%	88	189%	207	+59%	+119
Beechwood Avenue	111%	31	170%	157	+59%	+126
Sandpit Lane (W)	124%	83	170%	190	+46%	+107
Max DoS / Queue	**130%**	**88**	**189%**	**207**	**+59%**	**+119**

The results indicate that in the 2031'Future Base' scenario, the junction is forecast to operate significantly above capacity in both the morning and evening peak hours. In the morning peak hour the junction is forecast to operate with a maximum DoS of 133% and a mean maximum queue of 94 vehicles on the Sandpit Lane (E) approach. In the evening peak hour the junction is forecast to operate with a maximum DoS of 130% and a mean maximum queue of 88 vehicles on the Sandpit Lane (E) approach.

In the 2031 'Future Base + Development' scenario, the junction is forecast to continue to operate significantly in excess of capacity in both the morning and evening peak hours. In the morning peak hour the junction is forecast to operate with a maximum DoS of 157% on the Beechwood Avenue approach and a mean maximum queue of 143 vehicles on the Sandpit Lane (E) approach. In the evening peak hour the junction is forecast to operate with a maximum DoS of 189% and a mean maximum queue of 207 vehicles on the Sandpit Lane (E) approach.

Hatfield Road/Colney Heath Lane

The operational performance of the Hatfield Road/Colney Heath Lane junction has been assessed using PICADY5 software, which is the industry standard for predicting capacities, queues and delays at priority controlled junctions. Traffic flows have been input into a model of the existing junction. Table 3.5 summarises the results of the 2031 'Future Base' and 2031 'Future Base + Development' junction capacity assessments.

Table 3.5: Summary of Junction Capacity Assessments: Hatfield Road/Colney Heath Lane

Junction		2031 Future Base (Existing Layout)		2031 Future Base+Dev (Existing Layout)		Development Impact	
		Max RFC (%)	Queue (Vehs)	Max RFC (%)	Queue (Vehs)	Max RFC (%)	Queue (Vehs)
AM Peak (0800-0900)							
Colney Heath Lane	L	127%	49	148%	52	+21%	+3
	R	124%	19	149%	66	+25%	+47
Hatfield Road (W)	A+R	50%	1	48%	1	-2%	-
Max RFC / Queue		**127%**	**49**	**149%**	**66**	**+22%**	**+17**
PM Peak (1700-1800)							
Colney Heath Lane	L	61%	1	71%	2	+10%	+1
	R	51%	1	78%	3	+27%	+2
Hatfield Road (W)	A+R	48%	1	54%	1	+6%	-
Max RFC / Queue		**61%**	**1**	**78%**	**3**	**+17%**	**+2**

The results indicate that in the 2031 'Future Base' scenario, the junction is forecast to operate in excess of capacity in the morning peak hour, with a maximum RFC of 127% and a maximum queue of 49 vehicles on the left turn out of Colney Heath Lane. In the evening peak hour the junction is forecast to operate well within capacity with a maximum RFC of 61% and a maximum queue of 1 vehicle on the left turn movement out of Colney Heath Lane.

The College's development proposals are only expected to result in a small change in the overall volume of traffic forecast to use the Colney Heath Lane/Hatfield Road junction. However, as the College development proposals potentially include a new access at the Alban Park junction, with access to South Drive restricted to visitors and taxis only, there is expected be some localised reassignment of traffic which would change the turning proportions at this junction. For the purpose of this assessment it is assumed that only 20% of traffic from Hatfield Road (W) would continue to access the College via South Drive.

With the re-assigned 2031 'Future Base + Development' traffic flows, the junction is forecast to continue to operate significantly above capacity in the morning peak hour with a maximum RFC of 149% and a maximum queue of 66 vehicles on the right turn from Colney Heath Lane. In the evening peak hour the junction is forecast to continue to operate well within capacity with a maximum RFC of 78% and a maximum queue of 3 vehicles on the right turn movement from Colney Heath Lane.

Potential Highway Improvements

05

05 Potential Highway Improvements

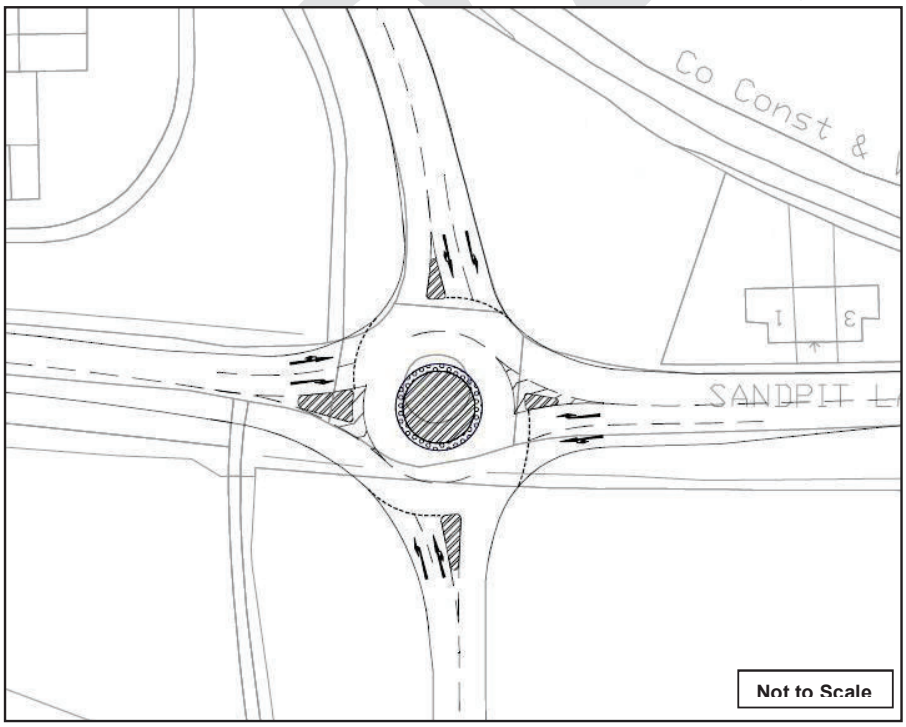
Introduction

The initial impact assessment suggests that a number of junctions in the local area may require improvement to accommodate the forecast levels of traffic associated with a residential development of 1,000 units. Consideration has therefore been given to the potential nature of the improvements that may be required at key off-site junctions.

Sandpit Lane/House Lane

It is envisaged that the existing roundabout at the junction of Sandpit Lane and House Lane would be enlarged to accommodate a southern arm serving the Oaklands residential development and also to provide increased capacity for the additional development traffic that would use this junction. The preliminary layout is shown in Figure 3.1 below.

Figure 3.1: Preliminary Layout of Sandpit Lane/House Lane Junction



The operational performance of the preliminary design layout above has been assessed using ARCADY6 software, which is the industry standard for predicting capacities, queues and delays at priority controlled roundabouts. Traffic flows have been input into a model based on the above preliminary design. Table 3.6 summarises the results of the assessments undertaken for the preliminary layout based on the 2031 'Future Base + Development' scenario and compares the results back to the results of the assessments of the existing junction layout in the 2031 'Future Base' scenario (i.e. without the additional development traffic).

Table 3.6: Summary of Junction Capacity Assessments: Sandpit Lane/House Lane

Junction	2031 Future Base (Existing Layout)		2031 Future Base+Dev (Preliminary Layout)		Development Impact	
	Max RFC (%)	Queue (Vehs)	Max RFC (%)	Queue (Vehs)	Max RFC (%)	Queue (Vehs)
AM Peak (0800-0900)						
House Lane	78%	3	63%	2	-15%	-1
Sandpit Lane (E)	75%	3	61%	2	-14%	-1
Residential Accewss	-	-	21%	0	-	-
Sandpit Lane (W)	107%	46	78%	3	-29%	-43
Max RFC / Queue	**107%**	**46**	**78%**	**3**	**-29%**	**-43**
PM Peak (1700-1800)						
House Lane	28%	0	24%	0	-4%	-
Sandpit Lane (E)	91%	8	82%	4	-9%	-4
Residential Accewss	-	-	21%	0	-	-
Sandpit Lane (W)	88%	6	75%	3	-13%	-3
Max RFC / Queue	**91%**	**8**	**82%**	**4**	**-9%**	**-4**

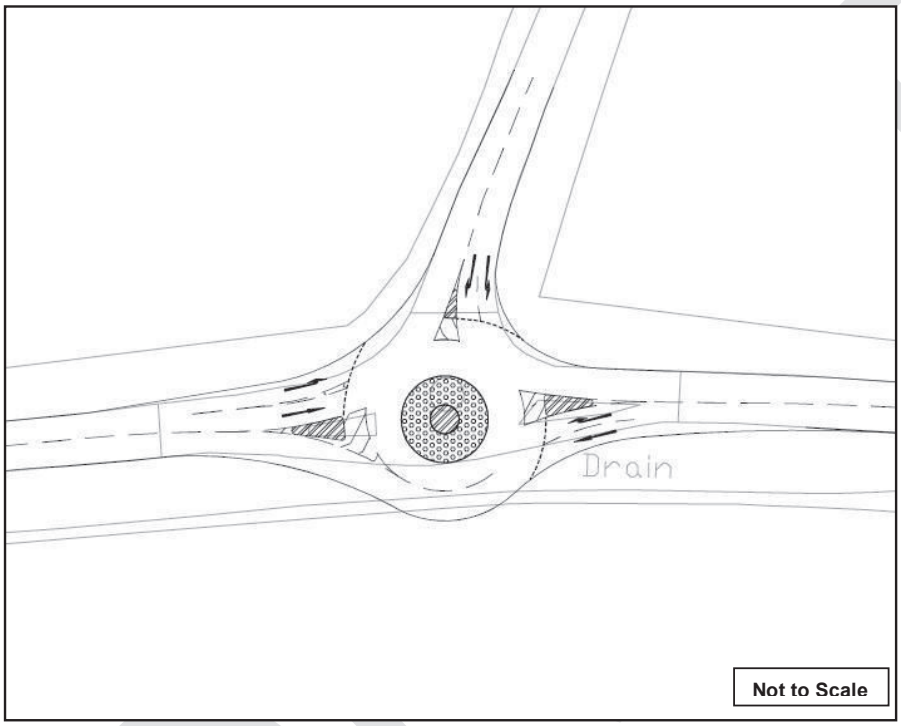
The results indicate that the site access junction is forecast to operate well within design capacity in both the morning and evening peak hour. In the morning peak hour the junction is forecast to operate with a maximum RFC of 78% and a maximum queue of 3 vehicles on the Sandpit Lane (W) approach. In the evening peak hour the junction is forecast to operate with a maximum RFC of 82% and a queue of 4 vehicles on the Sandpit Lane (E) approach.

The junction is forecast to operate well within design capacity and would provide significant betterment in the morning peak hour compared with the forecast conditions if the development did not go ahead.

Sandpit Lane/Coopers Green Lane Junction

Improvements would also be required at the junction of Sandpit Lane and Coopers Green Lane to accommodate the additional development traffic and improve the existing layout. The potential improvements could include enlarging the existing roundabout within the available highway land to provide additional capacity and increasing deflection to slow approach speeds and improve safety. A preliminary junction layout is shown in Figure 3.2 below.

Figure 3.2: Preliminary Layout of Sandpit Lane/Coopers Green Lane Junction



The operational performance of the preliminary design option has been assessed using ARCADY6. Traffic flows have been input into a model based on the above preliminary design. Table 3.7 summarises the results of the assessments undertaken for the preliminary layout based on the 2031 'Future Base + Development' scenario and compares the results back to the existing layout in the 2031 'Future Base' scenario (i.e. without the additional development traffic).

Table 3.7: Summary of Junction Capacity Assessments: Sandpit Lane/Coopers Green Lane

Junction	2031 Future Base (Existing Layout)		2031 Future Base+Dev (Preliminary Layout)		Development Impact	
	Max RFC (%)	Queue (Vehs)	Max RFC (%)	Queue (Vehs)	Max RFC (%)	Queue (Vehs)
AM Peak (0800-0900)						
Coopers Green Lane	100%	17	83%	5	-17%	-12
Oaklands Lane	51%	1	42%	1	-9%	-
Sandpit Lane (W)	97%	17	95%	14	-2%	-3
Max RFC / Queue	**100%**	**17**	**95%**	**14**	**-5%**	**-3**
PM Peak (1700-1800)						
Coopers Green Lane	83%	5	70%	2	-13%	-3
Oaklands Lane	67%	2	62%	2	-5%	-
Sandpit Lane (W)	49%	1	51%	1	+2%	-
Max RFC / Queue	**83%**	**5**	**70%**	**2**	**-13%**	**-3**

In this option the junction is forecast to operate within capacity in both time periods, with a maximum RFC of 95% and a maximum queue of 14 vehicles on Sandpit Lane (W) in the morning peak hour and a maximum RFC of 70% and a maximum queue of 2 vehicles on the Coopers Green Lane approach in the evening peak hour.

The results indicate that the performance of the junction would be improved on all arms of the junction compared with the 2031 'Future Base' scenario, with the exception of the Sandpit Lane (W) arm in the PM peak hour. On this approach, there would be a slight deterioration in performance compared with the 2031 'Future Base' scenario, however, the arm would continue to operate well within capacity indicating that the additional development traffic is unlikely to have a material impact on junction operation.

Overall the results of the initial junction capacity assessments indicate that an enlarged roundabout would improve the operation of the Sandpit Lane/Coopers Green Lane junction compared with the 2031 'Future Base' scenario, resulting in some betterment in both peak hours.

Sandpit Lane/Marshalswick Lane

The results of the assessments undertaken on the existing junction layout indicate that the additional masterplan traffic is likely to worsen performance in the morning peak hour by up to 29%, while in the evening peak hour performance is likely to deteriorate by around 59%.

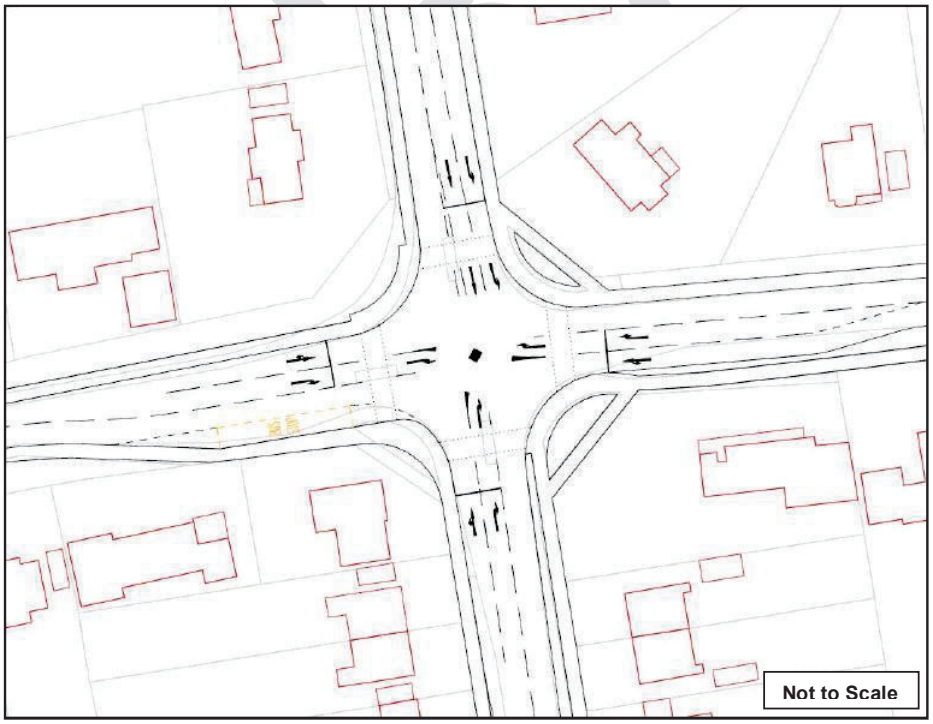
Improvements to this junction were put forward as part of the planning application submitted for the initial phase of the masterplan to provide additional capacity to accommodate the extra traffic generated by the development. The proposed improvements included removal of the existing pedestrian refuges and widening of the western and southern approaches to improve the overall throughput of the junction.

In order to accommodate the additional traffic that would be generated by the full allocation, further improvements at this junction would be required. Three potential options have been considered for this junction.

Signalised Junction Option

The first option builds upon the improvements that are proposed as part of the initial phase of the masterplan. It would involve widening the eastern approach to the existing junction to provide two lanes in the westbound direction and potentially banning the right turn movement from Marshalswick Lane (north) into Sandpit Lane (west). A preliminary design of this option is shown in Figure 3.3 below, which indicates that the improvements could be delivered with the available highway land, although it would result in the loss of verges and some mature trees.

Figure 3.3: Preliminary Layout of Sandpit Lane/Marshalswick Lane Junction (Signalised Junction Option 1)



The operational performance of the preliminary design option above has been assessed using LINSIGV3 software, which is the industry standard software for assessing signalised junctions. Traffic flows have been input into a model based on the above preliminary design. Table 3.8 summarises the results of the assessments undertaken for the preliminary layout based on the 2031 'Future Base + Development' scenario and compares the results back to the existing layout in the 2031 'Future Base' scenario (i.e. without the additional development traffic).

Table 3.8: Summary of Junction Capacity Assessments: Sandpit Lane/Marshalswick Lane (Signalised Junction Option 1)

Junction	2031 Future Base (Existing Layout)		2031 Future Base+Dev (Preliminary Layout)		Development Impact	
	Max DoS (%)	Queue (Vehs)	Max DoS (%)	Queue (Vehs)	Max DoS (%)	Queue (Vehs)
AM Peak (0800-0900)						
Marshalswick Lane	121%	38	101%	29	-20%	-9
Sandpit Lane (E)	133%	94	102%	38	-31%	-56
Beechwood Avenue	128%	32	100%	28	-28%	-4
Sandpit Lane (W)	124%	84	84%	17	-30%	-67
Max DoS / Queue	**133%**	**94**	**102%**	**38**	**-31%**	**-56**
PM Peak (1700-1800)						
Marshalswick Lane	100%	19	109%	44	+9%	+25
Sandpit Lane (E)	130%	88	111%	61	-19%	-27
Beechwood Avenue	111%	31	107%	29	-4%	-2
Sandpit Lane (W)	124%	83	111%	62	-13%	-21
Max DoS / Queue	**130%**	**88**	**111%**	**62**	**-19%**	**-26**

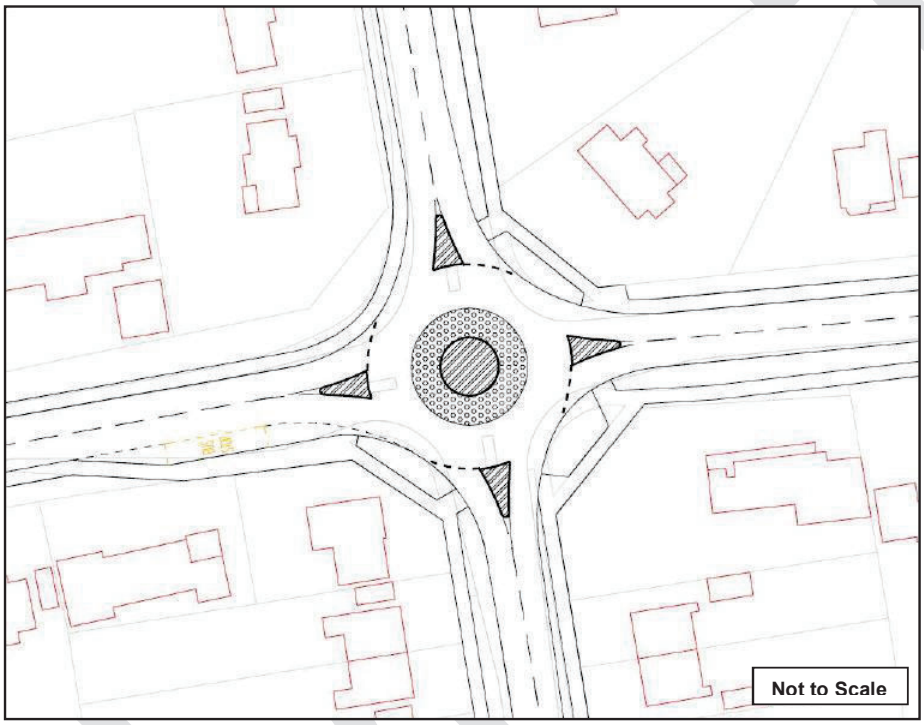
In this option, the junction is forecast to operate above capacity in both time periods. In the morning peak hour the junction is forecast to operate with a maximum DoS of 102% and a mean maximum queue of 38 vehicles on the Sandpit Lane (E) approach while in the evening peak hour the junction is forecast to operate with a maximum DoS of 111% and a mean maximum queue of 62 vehicles on the Beechwood Avenue approach.

While the junction would continue to operate at or above theoretical capacity, the results indicate that there would be an improvement in performance on all arms of the junction compared with the 2031 'Future Base' scenario. This represents a significant betterment at this junction in both the morning and evening peak hours compared with the forecast conditions if the development did not go ahead.

Compact Roundabout Option

The second option that has been considered for the Sandpit Lane / Marshalswick Lane junction involves replacing the existing signalised junction with a compact roundabout with an inscribed diameter of 28m. Peak hour traffic flows on all four arms of the junction are relatively balanced, so a roundabout solution may improve traffic flow compared with the existing traffic signals. However, consideration would also need to be given to the impacts of a roundabout on pedestrians and cyclists. A preliminary design for this option is shown in Figure 3.4 and indicates that it is likely that a scheme of this nature could be delivered within the available highway land, although it may result in the loss of verges and some mature trees.

Figure 3.4: Preliminary Layout of Sandpit Lane/Marshalswick Lane Junction (Compact Roundabout Option)



The operational performance of the preliminary design option above has been assessed using ARCADY6, which is the industry standard software for assessing priority roundabouts. Table 3.9 summarises the results of the assessments undertaken for the preliminary layout based on the 2031 'Future Base + Development' scenario and compares the results back to the existing layout in the 2031 'Future Base' scenario (i.e. without the additional development traffic).

Table 3.9: Summary of Junction Capacity Assessments: Sandpit Lane/Marshalswick Lane (Preliminary Layout – Compact Roundabout Option)

Junction	2031 Future Base (Existing Layout)		2031 Future Base+Dev (Preliminary Layout)		Development Impact	
	Max DoS (%)	Queue (Vehs)	Max RFC (%)	Queue (Vehs)	Max DoS (%)	Queue (Vehs)
AM Peak (0800-0900)						
Marshalswick Lane	121%	38	90%	6	-31%	-32
Sandpit Lane (E)	133%	94	111%	49	-22%	-45
Beechwood Avenue	128%	32	82%	4	-46%	-28
Sandpit Lane (W)	124%	84	85%	5	-39%	-79
Max DoS / Queue	**133%**	**94**	**111%**	**49**	**-22%**	**-45**
PM Peak (1700-1800)						
Marshalswick Lane	100%	19	91%	8	-9%	-11
Sandpit Lane (E)	130%	88	97%	14	-33%	-74
Beechwood Avenue	111%	31	92%	9	-19%	-22
Sandpit Lane (W)	124%	83	109%	41	-15%	-42
Max DoS / Queue	**130%**	**88**	**109%**	**41**	**-21%**	**-47**

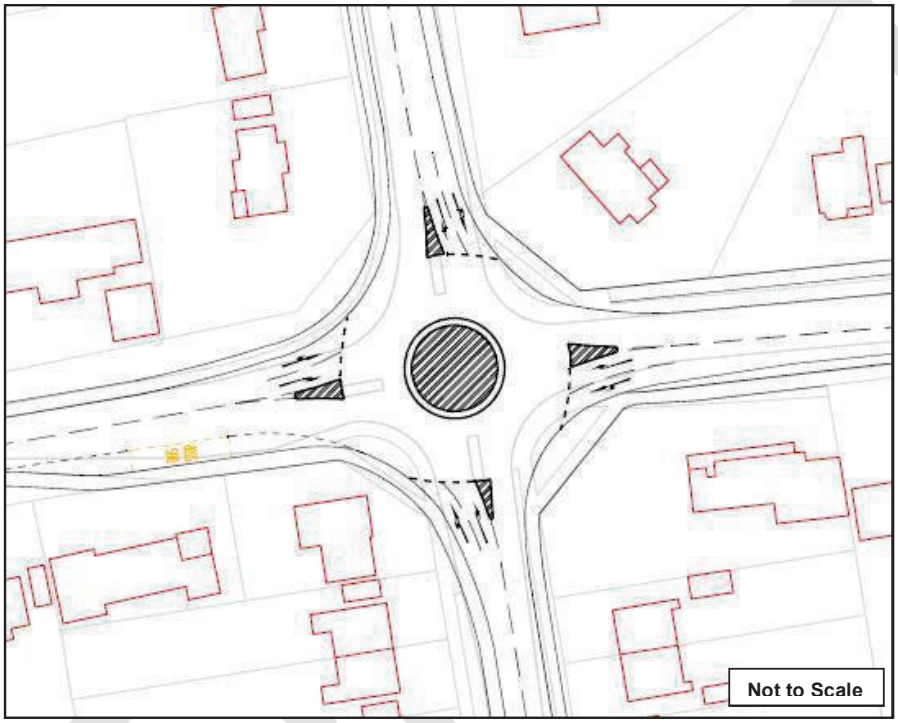
In this option the junction is forecast to operate above capacity on only one arm in each time period. In the morning peak hour the junction is forecast to operate with a maximum DoS of 111% and a mean maximum queue of 49 vehicles on the Sandpit Lane (E) approach while in the evening peak hour the junction is forecast to operate with a maximum DoS of 109% and a mean maximum queue of 41 vehicles on the Sandpit Lane (W) approach.

These results indicate an improvement in performance on all arms of the junction in comparison with the 2031 'Future Base' scenario and are a marginal improvement on the first signalised junction option. Overall, the results suggest that a compact roundabout option could provide significant betterment compared with the forecast conditions if the development did not go ahead, albeit that some arms of the junction would continue to operate above theoretical capacity.

Standard Roundabout Option

The final option that has been considered for the Sandpit Lane / Marshalswick Lane junction would involve replacing the existing signalised junction with a standard roundabout with an inscribed diameter of 32m. This is slightly larger than a compact roundabout and means that the approaches can be flared to provide two lane entries, which provide increased capacity. A preliminary design for this option is shown in Figure 3.5. Again, it appears that this option could be delivered within the available highway land, although it would result in the loss of verges and some mature trees.

Figure 3.5: Preliminary Layout of Sandpit Lane/Marshalswick Lane Junction (Preliminary Layout – Standard Roundabout Junction Option)



The operational performance of the preliminary design option above has been assessed using ARCADY6. Traffic flows have been input into a model based on the above preliminary design. Table 3.10 summarises the results of the assessments undertaken for the preliminary layout based on the 2031 'Future Base + Development' scenario and compares the results back to the existing layout in the 2031 'Future Base' scenario (i.e. without the additional development traffic).

Table 3.10: Summary of Junction Capacity Assessments: Sandpit Lane/Marshalswick Lane (Preliminary Layout – Standard Roundabout Option)

Junction	2031 Future Base (Existing Layout)		2031 Future Base+Dev (Preliminary Layout)		Development Impact	
	Max DoS (%)	Queue (Vehs)	Max RFC (%)	Queue (Vehs)	Max DoS (%)	Queue (Vehs)
AM Peak (0800-0900)						
Marshalswick Lane	121%	38	73%	3	-48%	-35
Sandpit Lane (E)	133%	94	78%	3	-55%	-91
Beechwood Avenue	128%	32	71%	2	-57%	-30
Sandpit Lane (W)	124%	84	73%	3	-51%	-81
Max DoS / Queue	**133%**	**94**	**78%**	**3**	**-55%**	**-91**
PM Peak (1700-1800)						
Marshalswick Lane	100%	19	76%	3	-24%	-16
Sandpit Lane (E)	130%	88	70%	2	-60%	-86
Beechwood Avenue	111%	31	78%	3	-33%	-28
Sandpit Lane (W)	124%	83	93%	9	-31%	-74
Max DoS / Queue	**130%**	**88**	**93%**	**9**	**-37%**	**-79**

In this option the junction is forecast to operate within capacity in both time periods. In the morning peak hour the junction is forecast to operate with a maximum DoS of 78% and a mean maximum queue of 3 vehicles on the Sandpit Lane (E) approach while in the evening peak hour the junction is forecast to operate with a maximum DoS of 93% and a mean maximum queue of 9 vehicles on the Sandpit Lane (W) approach.

These results indicate an significant improvement in performance on all arms of the junction in comparison with the 2031 'Future Base' scenario. This option represents an improvement over the signalised junction and compact roundabout options considered and would provide significant betterment in both the morning and evening peak hours compared with the forecast conditions if the development did not go ahead.

Hatfield Road/Colney Heath Lane

A new access to the College would be created on Hatfield Road at the junction with Alban Park. The existing priority T-junction would be replaced by a roundabout, with a new northern arm serving the College. This junction would become the main access into the College for staff and students, with only visitors, buses and taxis permitted to use the current access to the west.

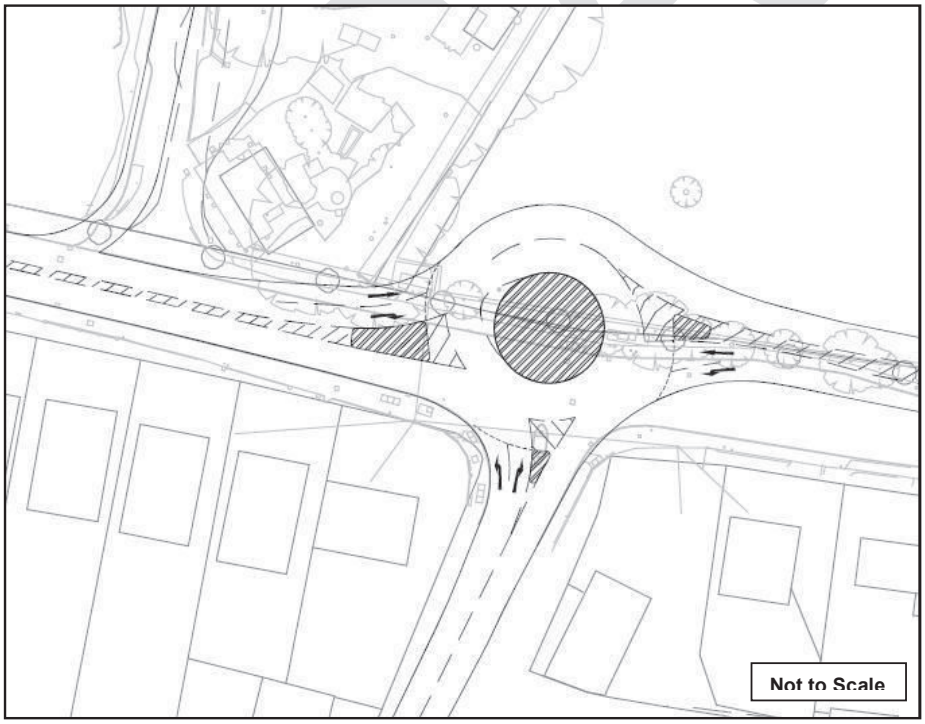
As a result of the reduced use of the current access, it is proposed that the South Drive junction would be reconfigured so that traffic can only turn left in from Hatfield Road. This would enable South Drive to become one-way northbound, with the existing southbound lane used to provide a segregated cycle route into the College.

The removal of right turning traffic from this junction creates the potential for improvements to be made to the nearby Hatfield Road/Colney Heath Lane junction and two potential options have been considered.

Roundabout Option

The first option would be to replace the existing junction with a roundabout. It is envisaged that the roundabout would be approximately 32m in diameter. A preliminary junction layout is shown in Figure 3.6.

Figure 3.6: Preliminary Layout of Hatfield Road/Colney Heath Lane Junction (Preliminary Layout – Roundabout Junction Option)



The operational performance of the preliminary design option has been assessed using ARCADY6. Traffic flows have been input into a model based on the above preliminary design. Table 3.11 summarises the results of the assessments undertaken for the preliminary layout based on the 2031 'Future Base + Development' scenario and compares the results back to the existing layout in the 2031 'Future Base' scenario (i.e. without the additional development traffic).

Table 3.11: Summary of Junction Capacity Assessments: Hatfield Road/Colney Heath Lane (Preliminary Layout – Roundabout Option)

Junction	2031 Future Base (Existing Layout)		2031 Future Base+Dev (Preliminary Layout)		Development Impact	
	Max RFC (%)	Queue (Vehs)	Max RFC (%)	Queue (Vehs)	Max RFC (%)	Queue (Vehs)
AM Peak (0800-0900)						
Hatfield Road (E)	-	-	45%	1	-	-
Colney Heath Lane	127%	68	64%	2	-63%	-66
Hatfield Road (W)	50%	1	69%	2	-19%	+1
Max RFC / Queue	**127%**	**68**	**69%**	**2**	**-63%**	**-66**
PM Peak (1700-1800)						
Hatfield Road (E)	-	-	63%	2	-	-
Colney Heath Lane	61%	2	44%	1	-17%	-1
Hatfield Road (W)	48%	1	47%	1	-1%	-
Max RFC / Queue	**61%**	**1**	**63%**	**2**	**+2%**	**-1**

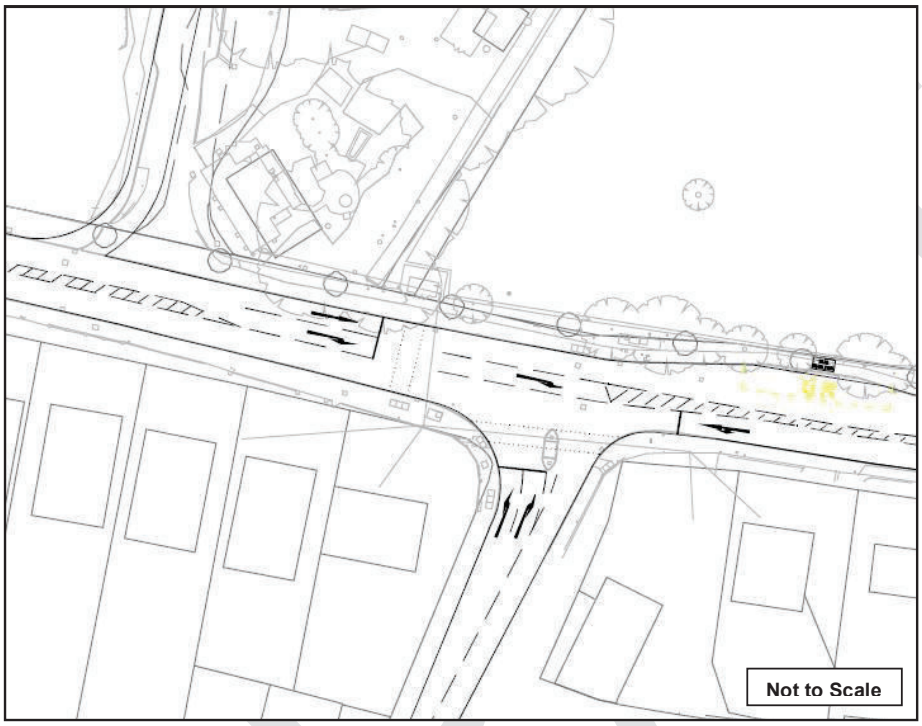
The operational assessment indicates that in the morning peak hour and the junction is forecast to operate well within capacity with a maximum RFC of 69% and a maximum queue of 2 vehicles on the Hatfield Road (W) approach. In the evening peak hour, the junction is forecast to operate well within capacity, with a maximum RFC of 63% and a maximum queue of 2 vehicles on the Hatfield Road (E) approach.

The results of the assessment indicate that the roundabout option would operate well within capacity in both peak hours, with conditions in the morning peak hour significantly improved compared with the 2031 'Future Base' scenario.

Signalised Junction Option

The second option would be to signalise the junction and a preliminary design of the junction is shown in Figure 3.7. The preliminary junction design includes pedestrian crossings on both the Hatfield Road (W) and Colney Heath Lane approaches.

Figure 3.7: Preliminary Layout of Hatfield Road/Colney Heath Lane Junction (Preliminary Layout – Signalised Junction Option)



The operational performance of the signalised junction option has been assessed using LINSIG V3 software. Traffic flows have been input into a model based on the above preliminary design. Table 3.12 summarises the results of the assessments undertaken for the preliminary layout based on the 2031 'Future Base + Development' scenario and compares the results back to the existing layout in the 2031 'Future Base' scenario (i.e. without the additional development traffic).

Table 3.12: Summary of Junction Capacity Assessments: Hatfield Road/Colney Heath Lane (Preliminary Layout – Signalised Junction Option)

Junction	2031 Future Base (Existing Layout)		2031 Future Base+Dev (Preliminary Layout)		Development Impact	
	Max RFC (%)	Queue (Vehs)	Max RFC (%)	Queue (Vehs)	Max RFC (%)	Queue (Vehs)
AM Peak (0800-0900)						
Hatfield Road (E)	-	-	69%	15	-	-
Colney Heath Lane	127%	68	92%	20	-35%	-48
Hatfield Road (W)	50%	1	91%	28	+41%	+27
Max RFC / Queue	**127%**	**68**	**92%**	**28**	**-35%**	**-40**
PM Peak (1700-1800)						
Hatfield Road (E)	-	-	79%	21	-	-
Colney Heath Lane	61%	2	89%	13	-28%	+11
Hatfield Road (W)	48%	1	90%	14	+42%	+3
Max RFC / Queue	**61%**	**1**	**90%**	**21**	**+42%**	**+20**

The results indicate that the signalised junction option is forecast to operate within capacity in the morning peak hour, with a maximum DoS of 92% on the Colney Heath Lane approach and a maximum queue of 28 vehicles on the Hatfield Road (W) approach. In the evening peak hour the junction is forecast to operate within capacity, with a maximum DoS of 90% and a maximum queue of 14 vehicles on Hatfield Road (W).

The results of the assessment indicate that the signalised junction option would operate within theoretical capacity in both peak hours, with conditions in the morning peak hour significantly improved compared with the 2031 'Future Base' scenario, but some worsening of performance in the evening peak hour.

The performance of the signalised junction option is forecast to be worse than the roundabout option, however as the preliminary design also incorporates pedestrian crossing facilities on both the Colney Heath Lane and Sandpit Lane (W) approaches, this represents a significant improvement in facilities for pedestrians over existing conditions.

Summary

Table 3.13 below summarises the results of the initial junction capacity assessments (maximum RFC/DoS) for the existing junctions with the 'Future Base' traffic flows compared with the results of the potential junction layouts with the 'Future Base + Development' traffic flows.

Table 3.13: Summary of Initial Junction Capacity Assessments (Maximum RFC/DoS)

Junction	Option	2031 Future Base (Existing)	2031 Future Base+Dev (Improved)	Development Impact
AM Peak (0800-0900)				
Sandpit La/House La	Roundabout	107%	78%	-29%
Sandpit La/Coopers Green La	Roundabout	100%	95%	-5%
Sandpit La/Marshalswick La	Signalised Junction	133%	102%	-31%
	Compact Roundabout		111%	-22%
	Standard Roundabout		79%	-54%
Hatfield Rd/Colney Heath La	Roundabout	127%	69%	-58%
	Signalised Junction		92%	-35%
PM Peak (1700-1800)				
Sandpit La/House La	Roundabout	91%	82%	-9%
Sandpit La/Coopers Green La	Roundabout	83%	70%	-13%
Sandpit La/Marshalswick La	Signalised Junction	130%	111%	-19%
	Compact Roundabout		109%	-21%
	Standard Roundabout		93%	-37%
Hatfield Rd/Colney Heath La	Roundabout	61%	72%	+2%
	Signalised Junction		90%	+29%

The results of these initial junction capacity assessments indicate that the potential mitigation schemes are forecast to significantly improve the operation of most of the junctions in both the morning and evening peak hours compared with the existing junction layouts in the 2031 'Future Base' scenario. At all junctions, options have been identified that would allow the junctions to operate within theoretical capacity in both peak hours.

Summary

06

06 Summary

Background

The draft Strategic Local Plan (SLP) produced by St Albans City and District Council (SACDC) covers the period 2011-2031 and includes the potential release of Green Belt land in East St Albans (Oaklands) for a residential development of 1,000 units on land to the north of the existing Oaklands College development.

As part of the ongoing consultation process, SACDC invited landowners/promoters to submit their vision for the development sites allocated within the draft SLP. An initial masterplan for the Oaklands College site was developed and submitted to SACDC in November 2015 with an emerging transport strategy submitted to SACDC in February 2016.

This note builds upon the information set out in the emerging transport strategy document. It sets out initial trip generation forecasts for the full allocation of 1,000 units and goes on to assess the potential impact that this level of development is likely to have on the key junctions and the potential nature of junction improvements that may be required to accommodate the additional traffic that would be generated by the full allocation.

Initial Trip Generation Forecasts

The draft SLP indicates that the East St Albans (Oaklands) site could accommodate 1,000 dwellings. A planning application for an initial phase of approximately 350 residential units has already been submitted to SACDC, with the later phases providing a further 650 units and a 2FE primary school.

The College's emerging masterplan includes an aspiration to provide 42% affordable housing across the whole site, including a small number of affordable units for specifically for College staff and students.

Initial vehicular trip generation forecasts for the full allocation of 1,000 units have been developed using the private and affordable residential vehicular trip rates underpinning the planning application for the initial phase of the masterplan and discounting trips associated with the primary school and College affordable housing. This initial assessment indicates that the development would generate in the region of 320 vehicle movements in the morning peak hour and around 550 vehicle movements in the evening peak hour (2-way).

Initial Assessment of Development Impacts

An initial assessment of the potential impacts of a development of 1,000 residential units has been undertaken. In the absence of traffic forecasts from HCC's COMET model, traffic growth forecasts have been based on a range of sources, with the highest traffic growth rate assumed as a worst-case scenario.

This assessment indicates that the Sandpit Lane/House Lane and Sandpit Lane/Marshalswick Lane junctions are forecast to experience the largest change in overall traffic flows, with potential for increases in traffic of up to 20% in 2031 compared with the 'Future Base' scenario. The Sandpit Lane/Coopers Green Lane junction is forecast to experience lower levels of growth at around 3-7%, while traffic flows are forecast to marginally reduce at the Hatfield Road/Colney Heath Lane junction due to the reassignment of College traffic associated with the proposed new access junction further to the east on Hatfield Road at the junction with Alban Park. Further assessment of the potential impacts of the masterplan traffic on the wider road network would need to be undertaken once traffic forecasts from the initial COMET runs become available.

Potential Mitigation Schemes

Given the potential level of impact on the key junctions around the Oaklands College site, consideration has been given to the potential nature of the improvements that may be required in each location. At the Sandpit Lane/House Lane junction, it is proposed to enlarge the existing roundabout to accommodate a new southern arm serving the residential development and provide additional capacity for the development traffic. The Sandpit Lane/Coopers Green Lane roundabout would also be enlarged to provide additional capacity and improve safety.

Three potential options have been identified for the Sandpit Lane/Marshalswick Lane junction; the first option increases the capacity of the existing signalised junction by widening the eastern approach to the existing junction to provide two lanes in the westbound direction and potentially banning the right turn movement from Marshalswick Lane (north) into Sandpit Lane (west). Two alternative options that involve replacing the existing signalised junction with a roundabout have also been investigated; the first based on a compact roundabout and the second based on a slightly larger standard roundabout .

Two potential options have been identified for the Hatfield Road/Colney Heath Lane junction. The first option would replace the existing priority junction with a roundabout, while the second option would introduce traffic signals at the junction.

The results of these initial junction capacity assessments indicate that the potential mitigation schemes are forecast to significantly improve the operation of most of the junctions in both the morning and evening peak hours compared with the existing junction layouts in the 2031 'Future Base' scenario. At all of the locations assessed, including the Sandpit Lane/Marshalswick Lane junction, options have been identified that would ensure the junctions would operate within theoretical capacity in both peak hours.

Conclusion

Overall this initial assessment indicates that there are a range of potential highway improvements that could be implemented which would not only mitigate the potential impacts of a residential development of 1,000 units on the Oaklands College site, but also result in significant improvements in performance across the local road network compared with the situation if the development did not take place.

The impact of a residential development of this size and the nature of the improvements required would need to be considered in more detail as part of any future planning application, in consultation with the local highway authority, Hertfordshire County Council.

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“The Oaklands Masterplan provides a once in a generation opportunity to establish a community which can offer a wide range of benefits and opportunity to its residents that at its heart is focused on education and the improvement of lives.”

Oaklands College Strategic Local Plan Submission

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Appendix 12: Transport Extract of East St Albans Landowner/Developer Representations Call for Sites 2018 (February 2018)

OAKLANDS COLLEGE
STRATEGIC LOCAL PLAN

Updated
February 2018

OAKLANDS COLLEGE

St Albans City & District Council

VRG planning

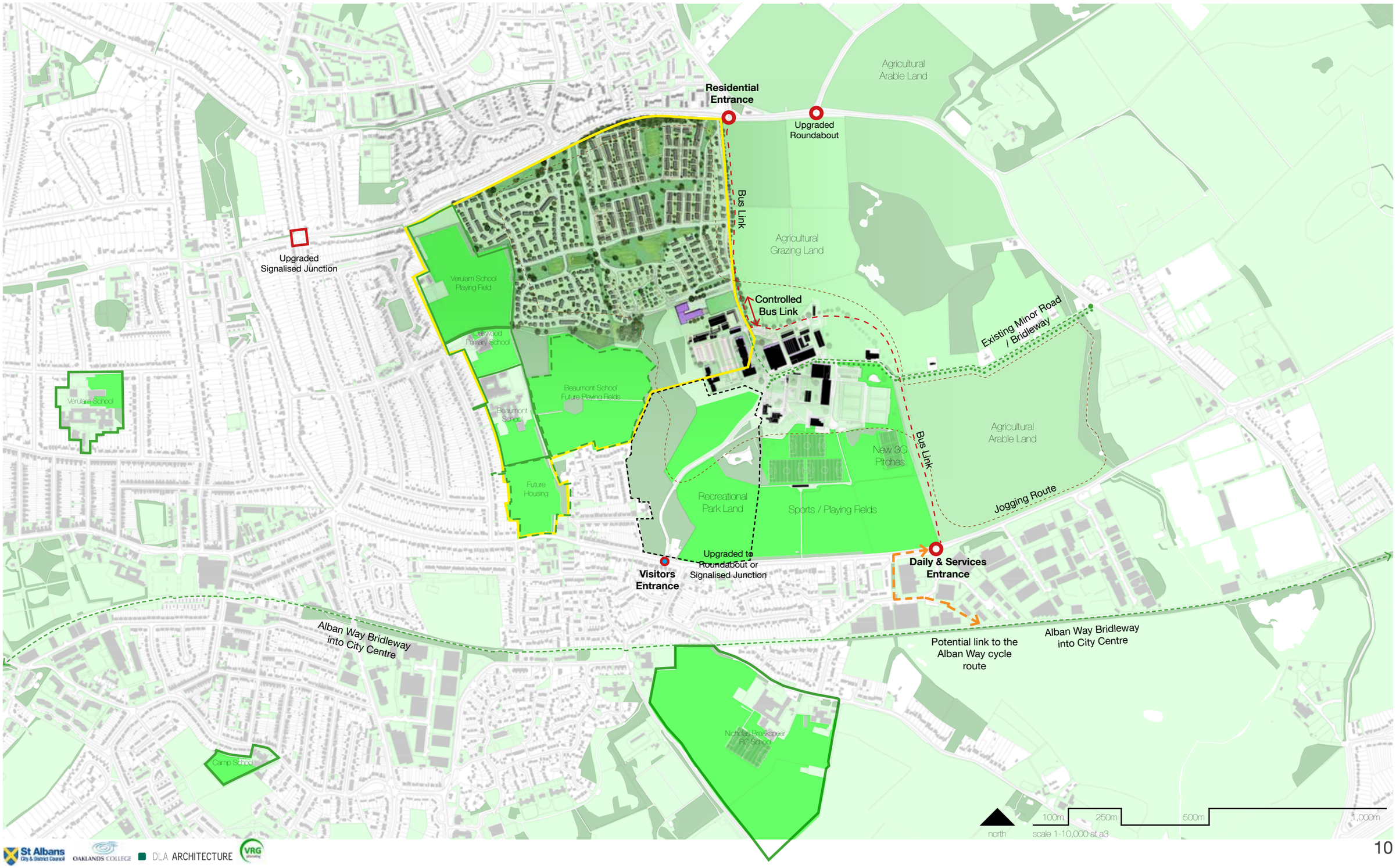
AECOM

Lambert Smith Hampton

DLA ARCHITECTURE

05 COMMUNITY & EDUCATION BENEFITS
MASTERPLAN & WIDER CONTEXT OVERVIEW

- A SUSTAINABLE & SENSITIVE GREEN BELT USE,
- ZERO CARBON AFFORDABLE HOUSING,
- HIGH QUALITY PRIMARY SCHOOL & COLLEGE PROPOSALS,
- COMMUNITY SPORTS, RECREATION FACILITIES & EVENTS.
- IMPROVED TRANSPORT PROPOSALS



05 A PROPOSED SUSTAINABLE MASTERPLAN
S3: EAST OF ST ALBANS

LARGE AREAS OF RESIDENTIAL AMENITY SPACE WITH WIDE HABITAT CORRIDORS

A COMBINED HEAT AND POWER FACILITY AT THE CENTRE OF THE SCHEME

SUSTAINABLE DRAINAGE INTEGRATED INTO THE MASTERPLAN THROUGH SWALES AND REED BEDS

A NEW TWO FORM ENTRY PRIMARY SCHOOL ABLE TO LINK WITH OTHER SCHOOLS IN THE AREA BUT ALSO WITH THE COLLEGE

COMPREHENSIVE NEW ROAD JUNCTION IMPROVEMENTS

INVIGORATING OPEN PUBLIC GREEN SPACES WITH SHARED ALLOTMENTS, ALONGSIDE PRIVATE GARDENS AND WOODLAND AREAS

A MIX OF HIGH QUALITY DESIGNED HOMES

42% AFFORDABLE HOUSING IN LINE WITH THE REQUIREMENTS OF THE LOCAL COMMUNITY

SELF-BUILD CODE LEVEL 6 EXPERIMENTAL HOMES WHICH WOULD ALSO BE USED AS A TEACHING TOOL FOR THE COLLEGE

COLLEGE SQUARE AS PART OF THE CURRENT MASTERPLAN.

THE COLLEGE AT THE HEART OF THE COMMUNITY & EDUCATION

IMPROVED PUBLIC ACCESS TO COLLEGE SPORTS FACILITIES

07 DELIVERY TIMETABLE & PHASING

DELIVERY & PHASING

- THE SITE PERFORMS PARTICULARLY WELL IN TERMS OF DELIVERABILITY, AS IT IS ALL WITHIN ONE OWNERSHIP AND A DEVELOPMENT PARTNER ALREADY EXISTS FOR THE FIRST PHASE,

- IT IS ENVISAGED THAT IN THE ORDER OF 100 DWELLINGS PER ANNUM COULD BE DELIVERED,

- INFRASTRUCTURE WOULD BE DELIVERED EARLY ON IN THE MASTERPLAN DELIVERY PROCESS. THIS IS IMPORTANT IN RELATION TO TRANSPORT FOR EXAMPLE,

- HERTFORDSHIRE COUNTY COUNCIL WOULD BE CONSULTED ON THE OPTIMUM TIME TO PROVIDE THE NEW 2FE PRIMARY SCHOOL TO ENSURE IT MEETS WITH THE NECESSARY NEEDS,

- THE PERMITTED 348 HOUSES ARE BEING DELIVERED BY THE COLLEGE'S EXISTING PARTNER TAYLOR WIMPEY AND THE COLLEGE WILL BE SEEKING DEVELOPMENT PARTNERS TO REALISE THE VISION FOR THE PROPOSED 652 HOUSES

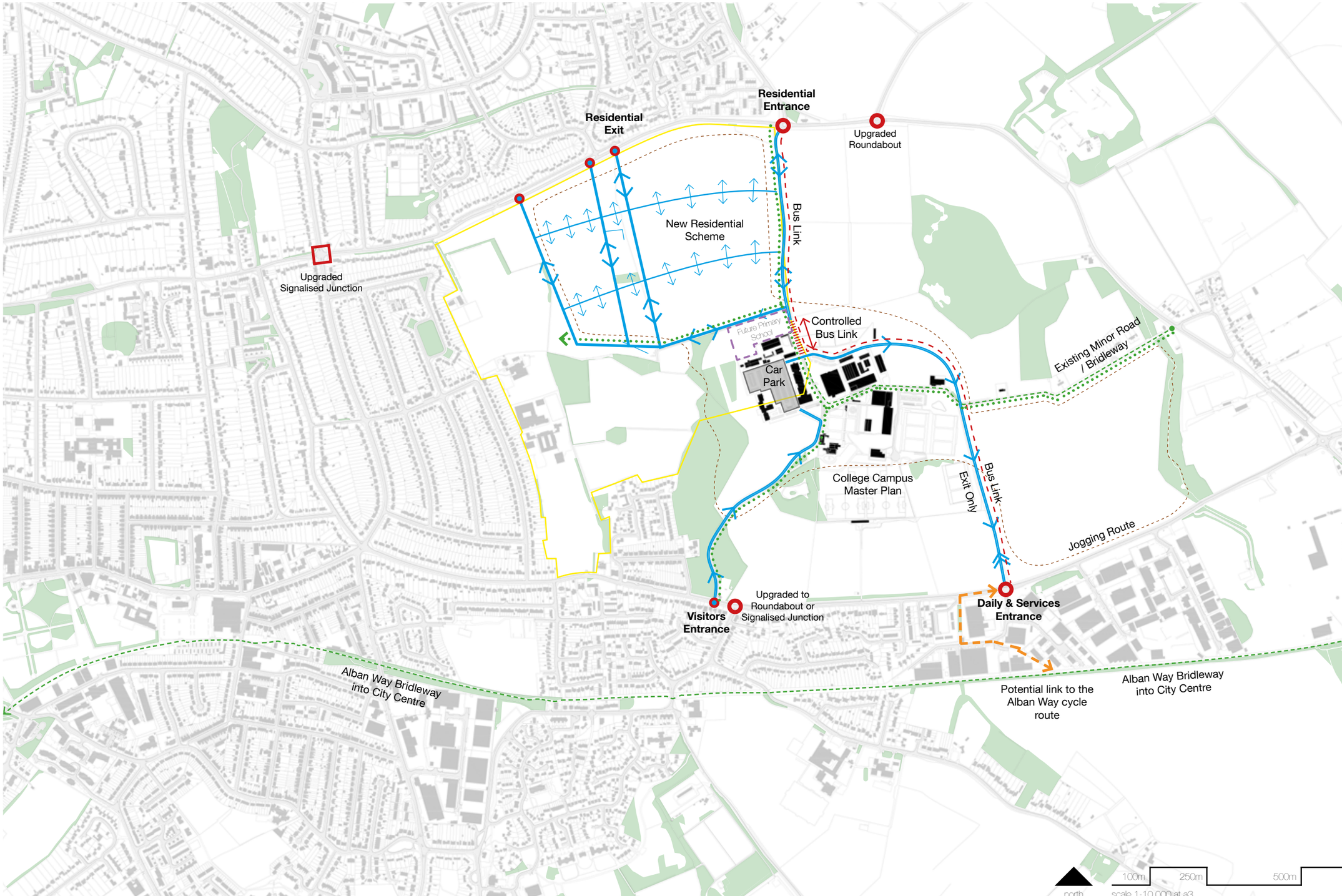
- THE COLLEGE WOULD USE THE SALE CONTRACT TO ENSURE THAT THE APPOINTED DEVELOPMENT PARTNER DELIVERS THE BENEFITS THAT HAVE BEEN AGREED,

- PLANNING POLICIES AND THE PLANNING APPLICATION CAN ALSO ENSURE THE AGREED BENEFITS ARE DELIVERED.

08 TRANSPORT NETWORKS & SERVICE IMPROVEMENTS

DIAGRAM KEY:

- Potential Green Belt Release Land
- New Main Road
- New Primary Access Road
- New Secondary Access Road
- Existing Minor Road / Bridleway
- New Footpath
- Potential cycle route to Alban Way
- New Jogging Route
- Bus Link
- New Controlled Road / Bus Link to
- New & Upgraded Connection
- New & Upgraded Roundabout
- New & Upgraded Signalised Junction



The photographs above show the existing Alban Way cycle route

08 TRANSPORT NETWORKS & SERVICE IMPROVEMENTS

THE BENEFITS OF THE PROPOSED TRANSPORT AND SERVICE IMPROVEMENTS INCLUDE:

- REDUCED TRAFFIC PROBLEMS AT THE JUNCTION OF SOUTH DRIVE / HATFIELD ROAD / COLNEY HEATH LANE
- A FREQUENT BUS SERVICE ACCESSING THE COLLEGE & RESIDENTIAL DEVELOPMENT
- BUS SERVICE DRECTLY SERVING THE COLLEGE, REMOVING THE NEED FOR STUDENTS TO WALK TO AND CONGREGATE ON HATIFLED ROAD AND AVOIDING DELAYS ASSOCIATED WITH BUSES PULLING IN / OUT
- LESS PRESSURE ON HATFIELD ROAD AS STAFF ACCOMMODATION WITHIN RESIDENTIAL DEVELOPMENT

THE EXISTING COLLEGE ENTRANCE:

HATFIELD ROAD / COLNEY HEATH LANE:

- OPTION 1:
- NEW 3 ARM ROUNDABOUT
- ACCESS ONLY THEREBY SOLVING EXIT ISSUES

- OPTION 2:
- NEW SIGNALISED JUNCTION
- ACCESS ONLY THEREBY SOLVING EXIT ISSUES

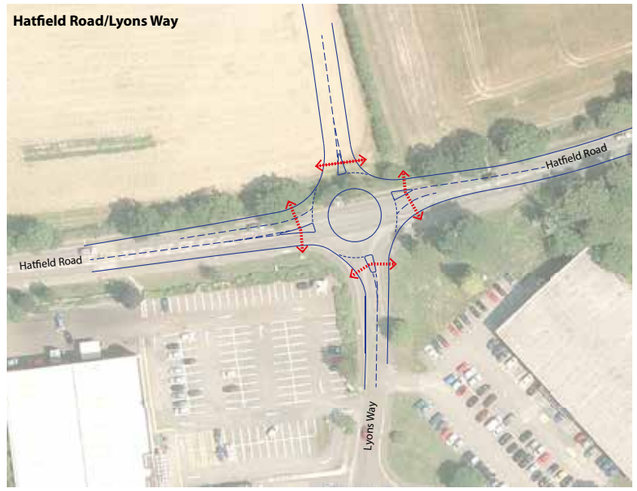
Hatfield Road / Colney Heath Lane

We have prepared two options for this junction. The first option shows the existing priority T-junction arrangement replaced by a 3 arm roundabout. This layout is consistent with the scheme agreed for the Hub scheme, so has previously been seen and approved by Hertfordshire. The second option shows the existing priority T-junction converted to a signalised junction. We did look at this as part of the Phase 2 application but couldn't get it to work due to the interaction with South Way. However, in both options we have assumed that South Way becomes entry only, therefore the signalised option may be worthy of further investigation as it requires significantly less land and allows pedestrian crossing facilities to be integrated into the junction.

NEW COLLEGE ENTRANCE / EXIT:

HATFIELD ROAD / LYONS WAY:

- NEW MAIN ENTRANCE / EXIT TO THE COLLEGE
- RELIEVING TRAFFIC PRESSURE
- PREVIOUSLY AGREED BY HIGHWAYS



Hatfield Road / Lyons Way

We have prepared an option showing the existing priority T-junction arrangement replaced by a 4-arm roundabout, with the northern arm serving as the new access to the College from Hatfield Road. Again, this layout is consistent with the scheme agreed for the Hub scheme, so has previously been seen and approved by Hertfordshire.

08 TRANSPORT NETWORKS & SERVICE IMPROVEMENTS

THE BENEFITS OF THE PROPOSED TRANSPORT AND SERVICE IMPROVEMENTS INCLUDE:

- INCREASED CAPACITY AT COOPERS GREEN AND SANDPIT LANE/MARSHALSWICK LANE
- SAFETY IMPROVEMENTS UNDERTAKEN

SANDPIT LANE / MARSHALSWICK LANE:

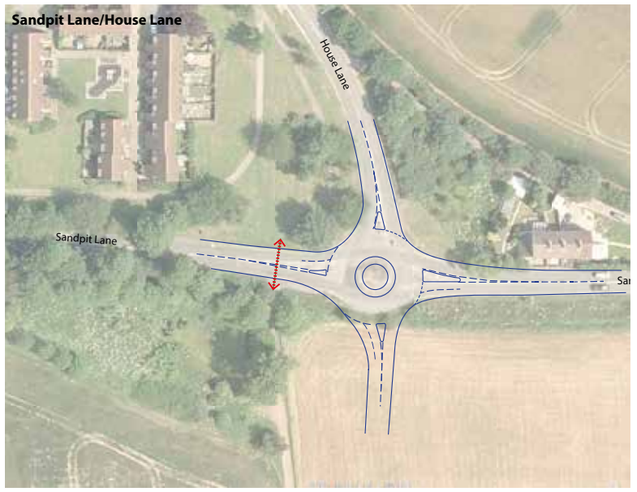
- WIDEN THE EASTERN APPROACH
- RELIEVING THE PINCH POINTS
- ADVANCED CYCLE STOPS

Sandpit Lane / Marshalswick Lane

Improvements are proposed at this junction as part of the Phase 2 application – these are shown in grey in the sketch. The only option we can see for further improvement to this junction is to widen the eastern approach by taking land from the verges to the north and south. The potential for two separate left hand turn lanes will be explored. Consideration could be given to introducing advanced cycle stop lines at this junction to encourage cycling.

NEW RESIDENTIAL ACCESS:
SANDPIT LANE / HOUSE LANE:

- NEW 4 ARM ROUNDABOUT
- RESIDENTIAL ENTRANCE / EXIT

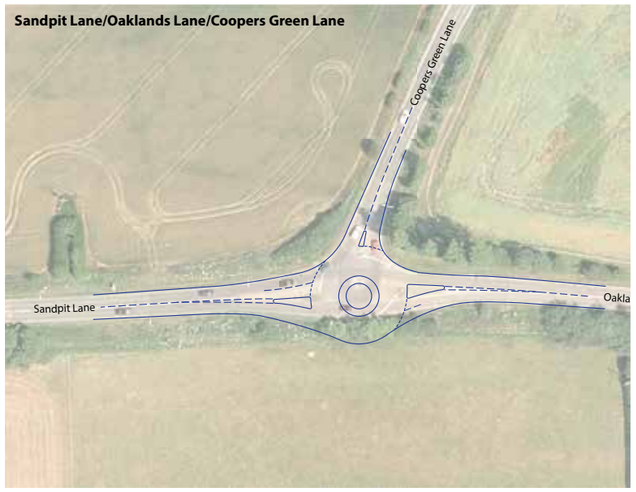


Sandpit Lane / House Lane

We have prepared an option showing the existing 3-arm roundabout replaced by a larger 4-arm roundabout, with the new southern arm serving as an access to the residential development

SANDPIT LANE / COOPERS GREEN LANE:

- ENLARGED 3 ARM ROUNDABOUT
- ADDITIONAL CAPACITY
- IMPROVED SAFETY



Sandpit Lane / Coopers Green Lane

We have shown an enlarged 3-arm roundabout, which would provide additional capacity and also improve the safety of the junction by increasing deflection which would slow approach speeds.

Summary

A summary of community benefits are as follows:

- The viability of the proposals have been verified to ensure the College are able to deliver the planning benefits detailed in this document.

- 42% affordable housing in line with the requirements of the local community, which offer truly affordable homes, including social rented home,
- A mix of high quality designed homes, in particular 2 bedroom and 3 bedroom homes helping to fill the gaps identified in the SHMA
- Self-build Code Level 6 experimental homes within the eastern portion of the masterplan, which would also be used as a teaching, tool for the College and St Albans residents,

- An exemplar high quality design masterplan that allows residents and the general public to access the parklands, the lake, existing and new footpaths, and cycle paths as well as the college restaurant, farm shop and community days centred on the new public square – College Square – as part of the current masterplan. This would include zero carbon for 650 of the proposed dwellings,

- A new two form entry Primary school able to link with other schools in the area but also with the college, enabling an exciting educational opportunity for the primary school children to access all the facilities the College has to offer,

- A Combined Heat and Power facility at the centre of the scheme and serving 650 of the dwellings,
- Sustainable drainage integrated into the masterplan through swales and reed beds,
- Large areas of residential amenity space with wide habitat corridors, considerable numbers of new native trees planted,
- Comprehensive new road junction improvements including new junctions and access roads – with the potential for a bus link through from Sandpit Lane to Hatfield Road,
- Improved public access to college sports facilities and the possibility for growth in this area to meet community need,

- And fundamentally – all the money released through this site allocation will be invested in realising the potential of the communities served by Oaklands College.

Please Note: Oaklands College are happy for the proposals within this document to be incorporated into the Strategic Local Plan policy text.

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